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EDUCATIONAL REVIEW

JANUARY, 1893

I

HIGHER EDUCATION IN THE UNITED STATES[1]

It is hardly possible for one whose life has been spent for the most part in other fields of activity, to say anything concerning higher education in the United States of great value from an educational point of view. I can indeed state impressions only on my own part, rather than matured convictions. I must hope that they will prove interesting, if not instructive, because they are what they are, the observations of one coming from without into the educational field in middle life.

I was graduated from Columbia college in 1870. I assumed the duties of the president's office of the college in 1890. In the interval of twenty years, the old college had changed almost beyond recognition. These changes manifested themselves not simply in the line of enlargement; some of them I have since come to look upon as typical of the movement of the times. As changes of this sort I would mention the development of a department of modern languages in the college proper, on a scale fairly commensurate with the classical departments of Greek and Latin; the development in many directions of advanced study and investigation, of a kind wholly unknown during my own career as a student; and a considerable enlargement of the elective system in its application to undergraduates. Inquiry and observation soon led

[1] Presidential address delivered at the fourth annual convention of the College association of the Middle States and Maryland, held at Swarthmore college, November 25 and 26, 1892.

me to perceive that these results which I noticed at Columbia were only the local expression of tendencies which had affected, in greater or less degree, all the colleges of the country.

It became a matter of interest to me, not to say of importance, to determine as far as I could the causes that had been at work to produce these results; for it was clear that these causes, whatever they were, at Columbia at least, had not spent their force. It seemed to be further clear that one who was to guide the development of a university must at least strive to understand whither they were tending. Speaking in a general way, then, I should say that higher education in the United States during the last twenty years has felt the influence of two strong currents, one of which I should describe, for want of better terms, as a world current, and the other as a national current. What I refer to as the world current is the demand which has been felt everywhere for the recognition of new studies as of equal intrinsic value, in these days, with the old humanities. This pressure has come especially from two directions: from the modern languages and from the many new developments of science. No country has been exempt from this pressure. In Germany the *realschule* has developed side by side with the *gymnasium*, and within the last year or two the entire educational world of the Empire has been shaken to its foundations by the demand made by the Emperor for a greater recognition of the modern branches, particularly of German itself, during that period of education which corresponds approximately with the college period here. In our own country, as is natural, these demands have met with a readier response. This response seems to me to have shown itself in our colleges in two ways: first, by the establishment of parallel courses leading to different degrees; second, to some extent, by the adoption of an elective system. In my judgment, the elective system reflects, perhaps in an even greater measure, what I have referred to as the national current, in regard to which I shall speak later; but it doubtless represents in part, as the parallel courses

seem to me to reflect altogether, the effort of our colleges to adjust themselves to these new demands.

While the colleges have thus dealt with the practical question, the theoretical question involved, as I see it, remains still unsettled. The colleges that maintain parallel courses leading to different degrees reserve the A. B. degree for the course that contains the classics, that is to say, both Greek and Latin, in something like the old proportions. The other courses lead to the degrees of bachelor of science, bachelor of letters, or the like. As a practical way of dealing with a question in regard to which men have been sharply divided, this policy has much to commend it. On the other hand, I cannot help feeling that it is the policy of a transition period. The question will continually return until it is finally answered, Do these parallel courses afford a liberal education, or do they not? If they do, why is it necessary to multiply degrees? If they do not, why should the college encourage men, by the tender of other degrees, to spend their time upon courses presumably believed to be less profitable? After a thorough discussion of the whole problem at Columbia, we have assumed the following attitude, as, in our judgment, the proper position to hold at the present time. We conceive of ourselves as offering three kinds of education: a liberal or college education, and university education of two kinds, professional and non-professional. Inasmuch as the A. B. degree is the generally accepted symbol of a liberal education, we give that degree, and that degree only, for our college course. The professional education that we give leads to its appropriate professional degree according to the course that may be taken; and the non-professional university education leads to the degrees of M. A. and Ph. D. At Columbia we are not yet ready to say that a man can be considered liberally educated who does not know something of antiquity as revealed through the classic languages of ancient Greece and Rome. We do not insist upon the equal proportion of this knowledge in every instance, neither do we undertake to say that other kinds of education may not be equally serviceable.

We do say, however, by our attitude, that, in our judgment, the classics must still be considered necessary component parts of a liberal education. Having this belief, we do not weaken it by offering any other degree. We will give every man all the educational privileges the college can offer, but we will not give him any degree to represent what may be called a quasi-liberal culture. This attitude, of course, concentrates the debate where, in my judgment, it ought to be concentrated, as to whether the classics are, in fact, necessary elements of a liberal education in this day and generation. If the time should come when the governing authorities of Columbia hold a different view from that which is now entertained, the recognition granted to those other courses doubtless will then be made full and complete. We shall still give only the A. B. degree as the symbol of our liberal education, but we shall have changed our conception of what a liberal education is.

As I have referred to the attitude of Columbia in this particular, it may not be improper to state what its curriculum is for which it now offers the A. B. degree. It consists of what may be called, with sufficient accuracy, the usual requirements for admission, including Greek and Latin. All work in the freshman year is required, and consists of three hours a week given to each of the following subjects: Greek, Latin, mathematics, English, and another modern language, either French or German. It will be perceived that this requirement recognizes the modern languages as an element sufficiently important to be insisted upon with the same emphasis as either Greek or Latin. I ought to add that there is also an entrance requirement in French and German, either of which languages may be presented by the student, although this requirement does not yet represent so much preliminary work as the entrance requirements in Greek or Latin. It will also be perceived that the attitude of the college toward the freshmen is to meet them with required work. They come to us at an average age of seventeen and a half, and they come to us as entire strangers from all sorts of fitting schools, good, bad, and indifferent.

We have not been able to believe it wise to meet a freshman class with any other option than the choice between French and German as the modern language to be pursued. No one connected with the college is capable of advising such men in the wise exercise of a broader election, and the men themselves are a heterogeneous body, if not altogether undisciplined, yet representing, certainly, very different degrees of discipline. One year of required work at the college serves a double purpose: it acquaints a certain number of our instructors with the personal equation of every student, so that from that time on, some of our instructors, in any case, are competent to advise each one; while it also trains the students themselves to take up the subsequent work of the college with something of Columbia's own spirit.

Accordingly, in the sophomore year, we meet the student with a single elective, upon the theory that the elective faculty itself needs to be trained in order to be used to the best advantage. This election is of the broadest possible character, as if a traveler were given the option of turning either to the east or to the west. The student can substitute three hours a week in chemistry, including laboratory work, for the same number of hours given to any language, either ancient or modern, except English. English remains among the required studies of the sophomore year, which are otherwise identical with the requirements of the freshman year, except that a two-hour course in history is introduced, and the mathematical requirement is reduced to two hours a week.

In the junior year, the required studies are history and political economy, ethics and psychology, with a certain demand for essay writing. Apart from these requirements the junior is given a very wide option in all the departments of letters, philosophy, and natural science.

In the senior year the student is entitled to study under any faculty in the university, making any combination of courses he may desire. In other words, the student's privilege of election is then complete.

Up to this point I have referred to the elective system,

largely, though not altogether, from the point of view which has led to the resort to it as one means of meeting the demands from the pressure of the world current, to which I have alluded, for the recognition of new studies in the old curriculum. It seems to me, however, that the elective system, as illustrated in this country, represents in part, and perhaps most importantly, the simultaneous pressure of what I referred to earlier in this paper as a national current. It seems to me that since my own student days, which ended in 1870, a new ideal has entered into the educational life of the country. At that period, men who wanted to be scholars in any particular direction, as distinguished from men of liberal culture, went abroad to conduct their advanced studies. Our colleges at that time doubtless imbued many men with a desire for scholarly attainments, but the colleges were not able to satisfy that desire. The college to-day, in my judgment, is no more able to satisfy that desire than it used to be. But, in the interval since 1870, most striking and important progress has been made in the United States toward the development, here and there, of a genuine university. If I am right, the difference between a college and a university is, to a great extent, a difference in aim. The college aims, or should aim, to lay the broad foundation upon which the university must build. The purpose of the college, otherwise stated, is to give a liberal culture. The purpose of the university is to develop the scholar, a man who may become the master of thought in his chosen field. The aim of the two being so different, it is clear that the methods pursued by each are likely to differ radically. In the college, and for the work of the college, men may be dealt with in classes. In the university, and for the work of the university, men must be dealt with as individuals. Men may be trained in classes, but scholars are not so made. It is an essential element, therefore, of the university system, that each man should do individual work peculiar to himself. It may touch the work of others at some points, but in its essence it must be individual. He must come in contact with the teacher, not

simply to imbibe such inspiration as may be derived from a general lecture, but in some effectual, personal way. He must be taught to use original authorities intelligently and effectively. He must have facilities offered him for individual work in research. These things imply great libraries, great command of current periodicals of every nature, great equipment by way of apparatus, and great facilities for its use, and, above all, the opportunity of personal contact with great teachers. Naturally, the older countries of the world have developed the university further than we have. Different countries illustrate different types, but everywhere you will find at the heart of the university system these necessary things that I have outlined. In England, when a man goes to Oxford or Cambridge, he is assigned at once to the care of a tutor, and he performs the whole of his university work under the guidance of an able and sympathetic friend. This tutor suggests to him the books he ought to read, the lectures he ought to attend, and, in general, serves as his personal guide through the broad country opened up before him by the university. This is a system, the excellent effects of which have made English literature and English scholarship notable throughout the world. It has grown up, as so many other things in England have grown up, out of conditions without a parallel anywhere else. Whatever may be its merits, and these will not be disputed, it seems to be a system wholly beyond our reach. Apart from the traditions that it involves, it requires vast endowments and a body of men of high scholarship who may be utilized in this way as personal tutors. I do not forget that in many respects the English system is the college system carried to its perfection, rather than a university system, in that the work done even by the men who are candidates for honors is to enable them to pass competitive examinations, rather than to demonstrate their individual acquaintance with the subject at large, as founded on original work. Nevertheless, the results serve to illustrate the advantage of individual treatment in its effect upon scholarship.

In Germany, on the other hand, a system has been developed which has been transplanted, in part, to this country with considerable success. In Germany, as I understand it, the universities assume the broad foundation which our colleges give. They adopt, as their controlling mottoes, these two ideas—that the teacher shall have freedom to teach and the scholar shall have freedom to learn. Public lectures to the students in large bodies represent their attitude to the great body of students. These lectures are depended upon for inspiration, rather than valued especially as a means of instruction. But out of the large body of students listening to the lectures are gleaned select companies to enter the seminarium of this or that professor for purposes of thorough and systematic research. In this closer intercourse the personality of the professor finds its opportunity to impress itself upon the student. There the student is taught how to use original materials, and is pointed out the most hopeful direction in which to seek for the results he wants. But the student himself does the reading and the work, not the professor. He is under the guidance and inspiration of the professor, rather than under his instruction. One can easily perceive how, under this system, the personality of the professor is all-important. Only the man who is himself full of learning and the master of his subject can tell another man how he may, in turn, become so, and transcend, perhaps, the fame of his teacher. Only the man who is himself aglow with the desire for knowledge can feed the flame in other men. Thus it is apparent that the university system of Germany, like the university system of England, makes great scholars by dealing with individuals and not with classes. Germany's intellectual leadership in so much of the scholarly work of modern times is due to its complete recognition of this principle, and to the thoroughness which has characterized all its applications of it. It places at the service of the individual student great collections of books, unexampled opportunities for scientific investigation and research, and brings him into personal contact with the acknowledged masters of thought over a great range of

learning. It is clear that Germany's method of making great scholars, like that of England, involves vast resources. England has obtained her endowments mainly from the benefactions of the past. Germany has been able, during the present century, to develop her university system with unexampled rapidity through the substantial aid of the state. In this country, we are obliged to rely, for the most part, on private gifts.

It is not strange, therefore, that up to 1870 there was hardly the trace, in this country, of a systematic effort to make scholars, in the special sense of the word that I have been using. Prior to that time, our students, who during their college course had become imbued with the desire for something more, went to Europe as a matter of course, in order to obtain it. As these men returned to the United States in larger and larger numbers, they brought back the desire for similar developments upon this side of the ocean. As a consequence, a most marked development in higher education in this country during the last twenty years has taken place in the direction of university instruction. The most fruitful influence in that direction, in my judgment, has come from the Johns Hopkins University. Having the opportunity to start afresh, unhampered by traditions or complicating conditions of any kind, the Johns Hopkins University struck out for itself a new path, so far as this country was concerned, and brought to practical test the possibility of developing here a higher grade of scholarship than had previously been developed save in occasional instances. So far as practicable, the methods adopted were, in effect, those of the German university. The results which have followed this fruitful experiment are to be seen not only in the success of the Johns Hopkins University itself, but in the strong influence that it has had upon the older foundations, and the newer as well, in leading them to move in the same directions. Twenty years ago there was almost no graduate study carried on in the country. To-day it is a marked feature of the higher education everywhere.

Another influence having the same tendencies seems to me

to have proceeded simultaneously from Harvard university. At a period considerably earlier than the foundation of Johns Hopkins University, Harvard began its tendency toward the elective system. Whatever criticism may be justly made upon the system in its application throughout the whole of the college course, there can be no doubt, I think, that its general tendency is to promote scholarship. You will all recall the notable paper by Professor Goodwin, read as the Phi Beta Kappa address at Harvard two years ago, in which he gave emphatic testimony to the fact that this had been its effect at Harvard. I do not know what were the specific motives that led to its use as a feature of all undergraduate work, but it seems to me to denote, in general, one phase in Harvard's development from a college into a university, in the stricter sense. The elective system does not of itself make a university, but it certainly is an essential feature of a university. It is the American expression of the German idea of the student's freedom to learn. As I have thought about it, it seems to me clear that at some point or another in the student's career the elective system is not only desirable, but it is essential. The question which is open to debate, in my own mind, is as to the point in the student's career at which this system has its proper beginning. I am not convinced that it is wisely applied without limitations at the commencement of the college course. I am prepared to admit that it may make for scholarship in a certain sense at whatever point it is begun; but it makes for scholarship, in part at all events, because it makes for specialization. An observation sometimes made concerning the Harvard graduates of to-day, as they are seen at Columbia, is that they are unusually developed along the lines to which they have given special attention, while, on the other hand, they are absolutely ignorant as to many things which we have been in the habit of taking for granted in college-bred men. In other words, after admitting that the system makes for scholarship, there yet remains the question whether it ought to be applied in the college course except under restrictions which secure the broad foundation of liberal

culture such as our colleges used to give. Naturally, I hold my mind open to conviction upon this question, as upon every other question of educational concern. I state my first impressions, with great diffidence, simply for what they may be worth. On the other hand, whatever limitations may be considered wise as to the application of the elective system during the college course, there can be no doubt that its thorough-going adoption by Harvard university has been one of the most powerful influences affecting higher education in the United States during the last two decades. Even those who have not adopted it without reserve have been profoundly influenced by the fact of its use at Harvard. It has been found, I think, to have a legitimate value, not only in the direction of scholarship such as depends in large measure upon specialization, but also in helping the colleges, as I have already pointed out, to meet the pressure from new subjects that have demanded attention in the college curriculum.

If these views are correct, it seems to me that an important consequence will follow a careful consideration of them. The fact that a new aim has become consciously recognized in higher education in this country since 1870, does not signify in any degree that the old aim is not still as worthy of pursuit as it ever was. In my own opinion it would be a profound misfortune for this country if the effort to obtain at home what our advanced students could formerly only obtain abroad, should result in depriving our college men as a whole of the benefits formerly conferred by the American college. In a greater or less degree it may be said of all our colleges what President Dwight said the other day concerning Yale, that, "during all her history Yale had been a school for captains." The American colleges have not themselves made great scholars, but the American colleges have produced in great numbers broad-minded men of large views, of high ideals, and of a lofty patriotism. Scattered all over the land they have been everywhere as salt among the people, an influence, at once to preserve and to purify. I do not say that the two aims are altogether inconsistent with each other; but I do say that if

the methods which will make captains will not necessarily produce scholars, so neither will the methods that make for scholarship necessarily be the best to produce captains. West Point is worth considering in this connection. The object of that school is specifically to produce captains, captains for the army, it is true, but still captains. To accomplish this result they do not adopt the methods which lead to pronounced scholarship. On the contrary, while thorough in their teaching as far as it goes, they lay great stress on discipline and required work. I am far from intending to argue that our colleges should be organized on the basis of West Point. Captains for civil life need not be trained as soldiers are. Nevertheless, I do believe that a great part of the value of the old college curriculum may have come from the fact that the work which it demanded from the students was required work. In other words, from the point of view of training, as well as from the point of view of retaining breadth in education, it seems to me that the ultimate college course, if there be such a thing, is likely to be found along some line that unites most successfully these two elements, that is to say, the element of positive requirement and the element of elective studies.

It would follow, also, would it not, if this presentation be correct, that every institution should ask itself in which direction its duty lies? The methods and the aims of a university and of a college appear to be so different that only a very few of the larger institutions can hope to unite both functions. The next quarter of a century is likely to throw great light upon the further question whether any institution can helpfully unite both functions. One thing seems already clear, that in any given case, if an institution can only do one sort of work well, it ought to confine itself to that work. A small college, as I conceive, can do college work as well as a large college. If it is fortunate in its faculty, it may even do it better. But no institution that cannot command vast resources in books, in apparatus, and in men, can hope to do university work at all well. Such a college may give some-

thing more to its graduate students than they get during their undergraduate course; but it does these students an injustice, if, by offering them a little at home, it keeps them from availing of the greater opportunities such as a thoroughly equipped university can offer. The best of our American universities are, in many respects, far enough behind the best European ones, in any case. Doubtless, we have already made great progress, and, doubtless also, as the years go by, we shall still further close up the gap; but it is idle to suppose that universities worthy of the name can be multiplied in this country as colleges have been. One of the most hopeful educational movements that has come to my attention is that which has been begun by the National Educational Association, to systematize and harmonize secondary education in this country. If the movement is wisely conducted to the end, as now seems probable, there is reason to look for the most beneficial results from it. When this work is finished, the next thing to be taken in hand ought to be the consideration of the proper relations between the college and the university. In the consideration of this question, also, there will be need for our best wisdom; and, in its solution, there must be a willingness to give and take on either hand. The great end to be reached, as I conceive, is something like a clearly defined educational system for the whole country, all the parts of which play naturally into each other. It is possible, of course, that the question will settle itself by the easy process of natural development. This, however, will not necessarily be the case. What I wish to emphasize is, that the problem before the higher education in its larger sense, in this country, is to fit into harmonious relations with the rest of the structure, this new thing, the university, which has begun to make its appearance since 1870. Time was when the college was the top of the educational system of the United States. It is so no longer, and it never can become so again. In that earlier period, the college was flanked on all sides by professional schools independent of the college and of each other, resting, for the most part, on no endowments and being

supported by the fees of the students. In other words, it was characteristic of that period that professional education could be no better than could be self-supporting. In the last few years all this is changing. The demand for better professional education in law and medicine, for example, has resulted in continually lengthening terms, in courses running over more and more years, and in a standard of scholarship that rises continually higher. As a consequence, these professional schools are beginning to fall into their places as integral parts of the university of the future. So long as they continue to be supported simply by fees, their relation to the university has no significance and is purely nominal. When they share with the other departments of the university the strength that comes from the endowments of the university, then a new thing has begun to be seen in American education. It signifies that the day is not far distant when the professional education given by universities will be recognized as standing upon an entirely different plane from that which is to be had only under conditions that permit it to be self-supporting. This first step in our progress has already been taken here and there. In the union of the College of Physicians and Surgeons in New York with Columbia college, a most important step in that direction was taken. The professors in the medical faculty have been made as completely independent of fees as the professors in the philosophical faculty. They are now no longer required to conduct the school under the pressure of the necessity of making both ends meet. They are rather expected to set up and to maintain the highest attainable standard of medical education. The next step forward will require time for its accomplishment, but that it will be taken seems to be only a question of time. The prophetic eye can even now discern the day when a college education will be a condition precedent for entrance into the professional schools of the American university. This will not mean that only college-trained men will make good practitioners in law or medicine, for example, nor that only college-trained men are entitled to a professional education. It will rather mean,

I think, that the university will then have fully realized its own obligation to the country to send forth into professional life, in all parts of the land, men of a thorough and wide equipment. It is impossible to produce such men in great numbers, without the necessary educational foundation. It is equally impossible to produce them if the standard is held down to the level that can be maintained without such a broad intellectual development to build upon. I am not anticipating this result in the immediate future, but that this is the end toward which things are tending seems to me hardly open to dispute.

Thus far, I have contented myself with observations on the things which I see. In closing, as one who has carried his college education out into the world, and tested it there, and who now has returned to the educational field to concern himself with the problems that are found there, I want to bear my testimony to the value of this thing which we call the higher education. It is doubtless true that the college graduate entering upon a business career is at a disadvantage during the first few years of his business life, as compared with those who entered business when he entered college. If, however, the man has a capacity for business, I venture to say that in five years, certainly in ten, he will find himself more than abreast of his friend who did not go to college. The trained mind can master the problems of business better than the untrained mind, as it can master other problems better for which it has itself any natural capacity. Beyond that, the man himself, outside of business, will have more resources, and is likely to be a greater power in the community in which he lives. When it is contended that college-bred men rarely succeed in business, it is to be remembered that it is currently believed that ninety-five per cent. of all men who engage in business sooner or later fail. It is only the select few in any department of human activity that conspicuously excel, and it may easily be that the tastes which lead men to go to college are not frequently found in combination with what I may call rare business genius. I venture

to predict, however, that should such a combination exist, a college education, so far from unfitting the man for a business career, would make him a power in the business world beyond all his compeers who had not been so favored. But this is only a small fraction of the field covered by the college and the university. I have endeavored to point out that, to a certain extent, the functions of the college and the university are different. On the other hand, they are alike in this, that they testify to the people the value of intellectual pursuits, and they send forth among the people, in one department of life and another, an element whose influence upon the population seems to me to be almost wholly good. The atmosphere of both college and university is that of freedom. During all history students have been among the foremost to sacrifice themselves in the cause of liberty. The colleges and universities emphasize also with a single voice the importance of truth. They lead men to search for truth. They teach men fearlessly to follow truth wherever it may lead. They teach that no time and no country has been without its truth. They teach men to be modest in the presence of new discoveries, as they recall the vast obligations of our own age to the generations that are gone. They teach men to be sanguine in the anticipation of still newer discoveries, by acquainting them with the continuity of progress throughout recorded history. The university by its libraries and by its men, is at once the great conservator of human knowledge, and a chief instrument in extending its limits. If I were, in these closing words, to indicate another of the many differences between the college and the university, I should say that the work of the college is to teach that which is already known—the work of the university is, in addition to this, to inquire, to ascertain around the whole circumference what lies beyond the line that marks the limits of the known. Both of these are noble functions. No worthier career is open to any man than, in either direction, to give his small aid toward the great consummation.

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II

DEVELOPING LITERARY TASTE IN STUDENTS

It is a delicate problem to adjust the relation between independence and a deference to authority. In *belles lettres*, especially, what seems best to the taste and appreciation of those who are called literary, often fails to please ordinary readers. Subtler phases of thought, heightened style, moods lifted above plain emotions, or plain emotions made great by Wordsworthian simplicity, do not appeal to the majority even of intelligent people. The classics of our poetry and prose are not popular, and where they are read, what to a few appears their best is quite missed by most. These think carelessly, feel bluntly, and are not sensitive to art and beauty. Yet most of them can think and feel, and are in some measure susceptible to æsthetic pleasure. Their difficulty lies in not applying their faculties successfully to literature, or still more, in not taking the trouble to attempt it. Accordingly, they judge inadequately and incorrectly. Well, how far should those who believe that such judgments are partial or mistaken try to impress their own views on the majority—to convert them to their own tastes? Especially in the case of students, is "good taste" to be taught?

There is a certain class of refined people who say that it neither can nor need be. They themselves are acquainted with literature because they like it. If others care for it, let them read it. If not, there is no more reason why they should concern themselves with books than with bacteriology or harmony or philology, topics which everyone considers it perfectly genteel to leave to specialists. Assumed opinions seem to them like eye-glasses and ear-trumpets for the incurably blind and deaf. What social adventures are so annoying as to fall in with the critical ineptitudes of pinchbeck culture? *Poeta nascitur non fit;* neither can his audience be manufactured.

It is to be hoped that this is not the case; at any rate the *laissez faire* of cultivated exclusiveness is not to be commended. People interested in botany or numismatics, for instance, may well enough be indifferent about popular enthusiasm for such subjects, but there are the clearest reasons why it is unfortunate, more than unfortunate, for intelligent people not to care about *belles lettres*. Too much profit is lost if they are missed: too much profit, too much pleasure.

One of the pathetic aspects of life is that so large a number never come to realize its inner meaning, or their hidden selves. They would stare in perplexity at Browning's entreaty to be "unashamed of soul." They move about in a world not realized, spiritual somnambulists. That self-consciousness by which all operations of brain and heart are vitalized into a new and finer meaning, is shut away from them through their want of sensibility. This is true even of men with brawny intellects that produce results of great practical value, and also of people with a kind of heart which is full of amiable utility. There is a broad difference between what the personal life means even to these, and the enjoyment, the intelligence, the intensity of it all for such as contemplate what they see, and dream out of routine experiences, within and around them, mystery and beauty. De Musset's career as an individual was not a satisfactory one, yet it is impossible to think of it as wholly unenviable when we hear his exclamation, "C'est moi qui ai vécu"—I have lived, I myself. Now, the incomparable excellence of literature, especially in poetry, is that it penetrates beneath the crust of life. Commonplaces are translated, and we find ourselves interested by what we have scarcely noticed. Ideas and sensations are presented through another medium than the matter-of-fact. The appeal is made, less to mental than to sympathetic responsiveness. Beauty of various kinds is forced upon the attention, until sensibility becomes more sensitive, and its capacity expands. Not that literature creates any habitual exaltation, or that curiously wrought moods hover over our books. There is nothing especially tangible about this developed way of looking at things, nor is it in the least

true that such a result is dependent upon reading. Yet there are multitudes whose finer sense has been quickened, who have taken a more serious view of important subjects which mean little when regarded only trivially, through the aid of the great writers; to say nothing of their having come to see their everyday world in pensive twilight sentiment, as well as in its meridian literalness. There is an immense difference between the hard pragmatic and the sympathetic contact with ideas. But how large a part of literature gives us more than ideas,—sensations. Through it we learn to feel, to feel through the whole scale of emotion, from soul to verbal form. Whatever stimulates a refined joy—stirs the imagination and keeps it abreast with clear sound sense,—vibrates to the voice of human personality, instead of being formal, mechanical, and barren of fruit for fresh warm life, is a part of literature's contribution to human progress. Even the mere contact with beauty? Certainly the aesthetic thrill is better than most things the world gives us.

In the light of such influences, any who are not anxious to develop appreciation for books, where it seems wanting, are deficient either in seriousness or in a sense of responsibility. But it is not easy to find the way in which this cultivation can be accomplished. Anyone whose profession has brought him into contact with young men by hundreds, knows to how many the grace and nicer meaning of poetry are locked and sealed. The first steps toward the desired results must be prosaic: people must train themselves, or be trained, to see what is on the surface, to grow conscious of metrical differences, for instance; not to remain quite blind to the real meaning beneath a figurative turn; even to come to recognize that there is a figurative turn. But nothing calls for more tact than how and to what extent to carry on this analysis. Observation and discrimination are indispensable, but literary drill runs a danger of concentrating the attention on fact as an end in itself. In most studies it may be so; in literature it is not.

This scientific age was sure to come to the gates of literary

criticism with hands full of method and systematization. Finding how difficult it is to induce students to get at the heart of a poem (and, it may be, sharing in the difficulty themselves), many earnest and well-meaning students have settled upon the close and thorough study of literature from the standpoint of information and analysis. They teach and they make editions with an eye to grammatical, rhetorical, and linguistic instruction. They present clear formulated methods for examining style or argument. They present other authors' exegeses as matter for direct acquisition or as models for application to similar criticism. They annotate texts with elaborate explanations. Their treatment may appear satisfactory: for anyone can memorize, and learn how to apply formulas. It is possible in this way to acquire tangible results, and people are accordingly pleased to think that they are learning; they even may become interested in the details of the study. Especially, ambitious students with little turn for originality make great progress. Yet what does literature mean for them? Superficial knowledge, facts—no soul.

The startling contemporary growth of this so-called scientific study is natural both for teachers and students. As the professional class enlarges, the fascination of the very name of literature and the gentility of the pursuit of it, naturally attract many whose best aptitudes are for acquisition and systematization. There is nothing so much to be feared, by those solicitous for the growth of real culture in this great country's assured destiny of abundant education of some sort, as the ascendency in the departments of literary direction of such mechanically trained scholars. Their methods and industry are hopeless substitutes for inspirations of mind and heart. How inferior they are to that simple-minded absorption of the spirit of our best authors granted even to ordinary men who study them with old-fashioned receptivity! We need to pray for a generation not of minor scholars, but of intimate and sympathetic readers. Let them be less fluent in grammatical and rhetorical arts, and more capable of a quick and happy quotation. Let them be as unconscious of critical phrases

and formulas of analysis as Shakspere himself was, and instead approach as closely as they may to the thoughts and feelings of his plays. The so-called "laboratory work" in literature may be deferred until scientists introduce literary methods into the laboratory.

So, too, about minute annotation of texts. Where they can be, allusions, dates, quotations, social or personal side touches, and the like, had better be looked up independently, if the reader desires to know them; and frequently—one almost trembles at the temerity of saying it—he is practically as well off without knowing them. If, for example, a line is quoted, why should the lightly touched passing illustration be made to distract his attention from the subject-matter by an excursus on its author and location? Why should he not go to one of our numerous recent dictionaries for an unusual word? Why should he be taught archæological details or verbal parallels here, while he is trying to learn how to read with his inner thought? A large number of teachers and edited books aim at making scholars, when they ought to try to make good readers. In every calling, technical difficulties become very dear to the practiced and expert workman, and the desire for thoroughness that is really the instinct of a scientific and orderly temperament must answer every question about allusions, origins, and verbal or archæological suggestions. Indeed, there is a place for this; the advanced and special student ought to understand them. It is easy enough to obtain a scholastic equipment when the right time comes. The difficulty is not in using the routine power of brain, but in getting into touch with one's creative consciousness of mind and heart. If the literary neophyte's attention is directed too largely toward facts, he may mistake the means for the end, and as a result of his training find the principal object that confronts him as he takes up new works, nothing spiritual and æsthetic, but only the task of obtaining exterior information, hunting down quotations, dates, and allusions, surveying a poem by the rod and line of a technical phraseology, detecting parallels, and baying at the holes of con-

jectural originals, finally to emerge from his studies learned, but not literary.

For infinite as is the value of its substance, the essence of literature is beauty. No slight part of its profit rests in the refining influence of its pure loveliness, and in the pleasure which its sweetness and art may add to our lives. To study it mechanically is like grasping a butterfly. It is all there in one's hand, all the "weight and size"; but alas for the one who supposes that this slender, quivering body which he holds is the winged color that flew. And this is just where the mistake is made by those proselytes from Philistia who attempt to conduct educational services in the temple of culture.

The aim, then, for most readers should be to acquire the art of sympathy. The first step toward this, if it does not come naturally, is to read some poem that pleases, until one is thoroughly familiar with it and can call up one and another line here and there, without the book. Then at odd times when one is not in too strenuous a state of mind, to try (if I may employ a word rather poetic for prose) to try musing upon what one remembers of the poem; not disappointed, if no very tangible result shall appear. By and by, when a sentiment has started, through which one begins to have some warmer feeling for the passage, it is well to go over the lines thoughtfully, scrutinizing their meaning, and endeavoring to ascertain the values of minor touches. Poetry should be read aloud, or at least the ear should be trained to follow a silent reading with the closest attention. One of the most interesting and at the same time helpful devices for close knowledge of a piece of literature, is to think out certain topics, such as what clews we find to a knowledge of the author himself; what suggestion we can note of this or that taste or opinion; in what lines his heightened style appears at its best; where he is most happy in fancy or in cadence. Such topics are interesting and instructive for themselves, and while we consider them we are growing more penetratively familiar with the work before us, without introducing any methods that are mechanical and intrinsically unimportant, if not repellent.

Anything, in short, that is sympathetic and personally stimulating, contributing something of richness to our knowledge and feeling of art, thought and life, is a good exercise in literary analysis. The point of view should be shifting, however, and the treatment flexible.

But although, so far as the primary value of literature goes, facts are nowhere of less importance, there comes a time when a wider and philosophical study is valuable and most interesting: such as observing the forces by which a great period or a great individual has been produced, or inquiring into the ways whereby schools of letters or single authors fall short through unfavorable antecedent or contemporaneous influences; or the biographical knowledge which adds personal interest to an author's work, and makes it more intelligible; or a study of his development, as we follow his writings chronologically. But large numbers of readers are not born for such pleasures and privileges, and many who might enjoy them have too little time; while others who pursue them miss the central good, by that old danger of mechanical and harshly intellectualized study. The most laborious students are frequently the most indolent, so far as interpreting what they read in terms of their own thought, soul, and sense for beauty.

Emerson says somewhere that at a performance of *Hamlet*, to which he had looked forward with great interest, he noticed nothing after the cry:

> What may this mean,
> That thou, dead corse, again in complete steel
> Revisit'st thus the glimpses of the moon,
> Making night hideous, and we fools of nature
> So horridly to shake our disposition
> With thoughts beyond the reaches of our souls?

Fancy the philosopher poet, his fine face bent down from the stage and the brilliant theater, as he sits possessed by the power of the lines, the magic of their nature touch, the solemn infinitude of human mystery which they suggest. When a passage becomes in this way our master, absorbing us with its appeal to heart or mind or sense of art, then we are getting

into the reality of poetry, and the key to it all is the cultivation not of brain, but of sensibility.

The fact that this is so impalpable makes it unteachable. Evidently, too, reading literature so perfectly is unusual and fortuitous. The great advantage of having poetry by heart lies just here, that when we are in the mood for this or that thought or sentiment, it comes to us, and is more a part of ourselves than when we untie it from printed words. Yet if we do not often enjoy such an Emersonian ecstasy, in a lower degree we are constantly susceptible to the vital interpretation of literature, as we more steadily apprehend that our highest study is not to acquire views or facts, but sensations. To this end, we must attend shrewdly, observing even minute details, since one never knows whether there is a secret for him here or there. We must listen for the note of personality. We must relax intellectual rigidity and read sympathetically. If a poem affords no sense of beauty, we must understand that we have read it amiss. To me it seems incomparably better that anyone's accidental moods should be haunted by a subtle or noble thought, or by a line that has soul or music in it, than for one to be a master of learning.

Important as it is that the interpretation should come from within, outside guidance is helpful. Many may receive hints from a comment upon a line, or a development of an author's less obvious traits, through which they will see what they have not seen. To such critical comments as Hudson's, for instance, some of us are increasingly grateful, if for nothing more than the service they did our early reading, in making us feel that there was a moral fascination in passages where our careless perusal had seen nothing. Of all American editors, Hudson (though intellectually unreliable and clumsy, and anything but a great man, save for his sometimes erring love and sympathy) has rendered the best service by stimulating to see the beautiful, not so finely on the side of art, but admirably on the ethical side. "Sign-post criticism" is scoffed at by many who do not need it; but compasses are constantly required, in spite of the world's Giottos.

But then, as readers develop, critics whose discrimination and æsthetic faculty overtop such writers as the one just named, afford great pleasure and assistance. When we are thoughtfully familiar with an author we enjoy listening to another and stronger student's comments upon him. Often new ideas are suggested, and we occasionally are quickened into an independent thought by the seemingly accidental stir of mind, perhaps even in resisting a view with which we do not accord. Some critical essays also have the nature of creative literature. There is the liveliest intellectual delight in coming in touch with an elegant and sympathetic mind, giving utterance to his sense of the charm and significance of an author whom we ourselves have felt. Even if there is nothing new, we enjoy the play of happy phrase and nimble association; we enjoy the sense of intelligent and refined companionship. But when a new lode is opened before us—meanings and graces unguessed before, aside from our absolute acquisition, how profitable is the sudden discontent with our dull, creeping, inattention! From interesting criticism, too, the desire for first-hand knowledge may be acquired, and convenient, if not at times necessary, guidance in selection.

But the most profitable criticism is that broad and philosophical general discussion which is illustrated by such authors as Coleridge or Arnold. Such passages put us on the track of what we need to recognize, if we are to appreciate the higher literature on both its sympathetic and intellectual sides, without the disadvantage of offering to do our thinking for us in specific application. They call our attention to points which, after we have once noticed them, we find constantly recurring in our reading. Our literary life is made richer by observing them. They suggest topics which it is stimulating to think out. By bringing us in contact with a more theoretical and æsthetic range of ideas, they widen our intellectual and artistic world. They lead our commonplace taste to a just view of what it is right to admire. Nor is it a trifling service that they set before us various phases of the history of literature, one of the most fascinating and profitable of all studies.

Yet in reading even the most admirable criticism, we need to keep constantly in view our personal relation to literature. All aids, are only instrumental to our close and loving companionship with authors who will make our lives more agreeable, more thoughtful, more sympathetic. Especially in poetry, it is the aim of all study to enable every reader to be his own critic, and thereby ultimately to be, we may say, his own poet. For the finest thoughts, most newly and perfectly apprehended by a great writer's intellect and emotion, and best expressed, realize their highest mission only when the reader becomes to them the creative artist, and takes them up as Shakspere took the crude work of his predecessors; so that by a personal interpretation and heightening, a noble plagiarism, the poetry of thought, feeling, and style is sung by himself to himself alone, in that inner language which we so rarely employ, yet which we surely have employed whenever a poem has flashed from book to brain and soul, and become a mood, a picture, or an inspiration. Yet the levels of literary pleasure are more usual than the heights, and a considerable part of our interest in books is more reflective than emotional. But never unsympathetic; never, if what we call literature is really so, will it yield its best unless we approach it in a spirit not of fact but of sensibility. It will render us more of itself, as we bring to it more of ourselves. Its great gift is in expanding and satisfying our finer nature, and as we grow in refinement of brain and delicacy of feeling, we shall appreciate how well the effort pays of learning it, instead of learning about it. There is a line of Matthew Arnold's, regarding life in general, in which for myself I constantly sum up the true art of interpreting literature:

Think clear, feel deep, bear fruit well.

For surely out of an intimacy of mind and heart with those who have drawn most thought, feeling, and beauty out of life, the fruit of a happier and better character can hardly fail to be born.

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III

STATUS OF THE HIGH SCHOOL IN NEW ENGLAND

The work of the high school is determined in nature largely by the fact that it has to meet the wants of two distinct classes of pupils: those who expect to complete their formal education under its care, and those who wish to be prepared to enter upon technical or collegiate study elsewhere. As the high school is maintained at public expense, and as one of these classes of pupils is large, and the other eminently respectable, it has been found expedient to consult the wants of each. Experience has proved that this course rests upon a higher wisdom than expediency—that the daily association of those in the "academic" and the "college preparatory" courses has been of mutual advantage. Only four cities in New England provide separate schools for those preparing for college, and in three of these the unwieldy size of a single school made a division necessary, and with the division came the differentiation, not as a cause but as an accompaniment.

The articulation of the high school with the grammar school—which has become so close—the equipment of the high school in instructors, building, apparatus, and available libraries, and, above all, its superior adaptability to the needs of its constituency, have conspired to make it in New England without a rival in the education of those who do not intend to pursue their studies beyond the bounds of the secondary school. The few endowed schools that profess to offer to pupils of this class advantages superior to those of the high school, are situated chiefly in towns that have no high schools, and are in some instances aided by public money that would go to the local high school, if there were one.

In general, the private and endowed schools make little direct effort to secure the attendance of the class of pupils

just mentioned, but seek to attract those who wish to prepare for institutions of higher grade. The number of such schools reporting to the United States Commissioner of Education is, in New England, the same as the number of cities and towns, of three thousand population and over, that maintain public high schools. A comparison between the work done by the public schools and by the private schools in fitting students for college would show how fully the high schools are meeting the demand made upon them by the second class of pupils named. During the month of October last a letter of inquiry was sent to the principal of the high school in every town of three thousand inhabitants in each of the six States. A few smaller towns were also included, but no attempt was made to get complete reports from these, as comparatively few of the schools in such towns do college preparatory work with success. The same letter of inquiry was sent to the principals of most of the private schools whose statistics were not accessible in catalogues. The first question was as to how many students had gone directly from each school to each of the New England colleges within the last three years.[1] The schools were also asked to report the number sent to the Massachusetts Institute of Technology; it was assumed that the data for this would fairly represent the work of the high schools in preparing students for the pursuit of technical courses. So many principals volunteered more detailed replies that it is safe to say that the proportion of students sent by high schools to Chandler, Lawrence, Sheffield, Tufts (Engineering), and the Worcester Polytechnic is greater than that reported for the Institute of Technology.

Replies were received from principals of high schools representing in each State approximately ninety per cent. of the population concerning whom inquiry had been made. The reports received are given below in Table I. This table includes only those sent fully prepared to enter the regular

[1] In order to secure a fair *average*, the smaller towns were asked to report for four years, while eight or ten large schools, whose yearly number is nearly constant, reported for one year only. In cases of doubt further inquiry was made before these were reduced to three-year averages and included in Table I.

courses; all reported as special or partial course students are omitted. In the column giving the average size of the freshman class in the colleges, only those living in New England are included, in order that the comparison may be made between the work of the public and the private schools in fitting residents of New England for entrance:

TABLE I

AVERAGE ANNUAL NUMBER OF STUDENTS SENT TO COLLEGE BY PUBLIC HIGH SCHOOLS

Number of high schools that have sent students to each college since May, 1890							COLLEGES	*Average annual number sent*							*Average annual number of freshman class living in New England*	*Per cent. of those living in New England prepared in high schools*
Total for each College	*Maine*	*N. H.*	*Vermont*	*Mass.*	*R. I.*	*Conn.*		*Maine*	*N. H.*	*Vermont*	*Mass.*	*R. I.*	*Conn.*	*Total*		
46	4	2	1	32	2	5	Amherst	1⅓	2	⅓	22	2	2	29⅔	56	53
12	6	4	..	2	..	..	Bates	14	11	..	15	..	..	16⅔	48	35
48	5	3	2	37	..	1	Boston University	1⅔	1⅓	1⅓	39	..	⅓	44	70	63
20	19	1	..	..	..	..	Bowdoin	22	..	..	..	..	..	22⅓	52	43
30	1	2	2	15	8	2	Brown	⅓	1⅓	1	10⅔	34⅔	⅔	48⅓	89	55
18	13	..	..	5	..	..	Colby	22	..	..	3⅓	..	..	25⅓	52	49
36	2	13	7	12	2	..	Dartmouth	1	20⅔	4	6	1⅓	..	33	58	57
53	4	3	2	39	2	3	Harvard	2	1⅓	1⅓	115	1⅔	1⅔	122⅔	262	47
6	..	..	3	3	..	..	Middlebury	..	..	6	1	..	..	7	20	35
40	6	3	2	20	2	7	Mt. Holyoke College	2	2	1	10	1	4	20	36	55
68	4	11	2	39	4	8	Smith	2⅓	6⅓	1⅔	56	4⅓	12	82⅔	110	75
9	..	1	2	2	1	3	Trinity	..	⅔	..	..	⅓	3	5	12	42
27	4	2	1	20	..	..	Tufts	1⅔	1	..	14⅔	..	..	17⅓	25	71
10	..	..	8	2	..	..	University of Vermont	..	..	24	..	..	..	24⅔	49	50
80	10	6	4	44	6	10	Wellesley	6	4	2⅓	40	4	5⅔	62	89	70
18	3	1	..	7	1	6	Wesleyan	1	⅔	..	4	⅓	9	15	42	36
26	1	2	4	15	..	4	Williams	..	1	1⅓	8	..	1⅓	12	33	36
32	2	..	1	13	1	15	Yale	..	..	⅓	9⅔	1	48⅓	60	87	69
*	25	15	13	84	9	18		78⅓	44	45⅔	342†	50⅓	88	649	1190	55‡
76	11	6	5	40	5	9	Other Colleges	6	5	8	56	3	7	85	..	..
79	7	5	1	60	4	2	Mass. Inst. of Technology	3⅓	3⅓	⅓	96	1⅔	⅓	105	184	57

* The figures in this half-line give the number of *different schools* included in this part of the report. About twenty more schools are included in the figures given for the Massachusetts Institute of Technology.

† In making a comparison by States it should be noted that three-fifths of the population of New England living in cities and towns of 3000 are found in Massachusetts.

‡ This would without doubt be raised to sixty per cent. or more if all the schools had reported.

This table brings to light several interesting facts, among which may be noted the relative predominance of the local or State constituency in each college, and the relatively large number of schools that send students to the larger colleges. From these it is a fair inference that it is the free choice of the

pupil rather than the limitations of the school that determines the college for which he prepares—that the reason certain schools do not send more students to certain colleges is that their pupils prefer to go to others, and not that the school is unable to prepare them for any college.

That the colleges for women should be more closely connected with the high schools than are the colleges for men is to be expected.

The proportion reported for the three Maine colleges is noticeably below the general average. It is not, however, to be inferred from this that the public schools of Maine are correspondingly inferior. Replies received from the private schools that are the recognized "feeders" of these colleges fail to account for as large a percentage of the students as the high schools report, and the quota from the other well known academies barely makes the numbers equal, thus leaving about fourteen per cent. unaccounted for. It is probable that these are drawn about equally from small private schools and from public schools that failed to reply.

Wesleyan, Williams, and Middlebury appear to be the only colleges that fail to attract a fair proportion from the public schools.

Among the "other colleges" reported are Columbia, Princeton, Cornell, Oberlin, University of Michigan, Barnard, Harvard Annex, Vassar, and more than twenty others. Many students are also reported as sent to schools of law, divinity, and medicine.

It is more than probable that the percentages given in Table I would be materially increased if it were possible to secure reports from all the schools. No data are at hand for ten per cent. of the population in towns containing over three thousand, or for the towns smaller; and in these smaller towns dwell sixty per cent. of the population of Maine, over fifty per cent. in New Hampshire, over seventy per cent. in Vermont, not far from ten per cent. in Massachusetts, twenty per cent. in Rhode Island, and nearly thirty per cent. in Connecticut. In Massachusetts alone about two-fifths of the high

schools are in these smaller towns. Though only a very small proportion of such schools prepare pupils for college, their aggregate, if it could be had, would be worth recording.

The private schools of New England may be roughly divided into three classes: (1) The old endowed academies that have become famous as preparatory schools for the older colleges; (2) the denominational schools, which, though not sectarian, owe most of their financial support and the larger part of their pupils to the favor of one of the religious denominations; and (3) the academy, fully or partly endowed, that has made the organization of a local high school unnecessary, and attracts a small proportion of its pupils from the surrounding towns. A careful compilation of data from the catalogues of a large number of these schools, shows that they are patronized by comparatively few pupils from towns large enough to support a good high school. It has not been possible to get a complete file of these catalogues, but a statement of the facts for a few typical ones will indicate the nature of the constituency of the endowed schools.

The academies at Exeter and at Andover fairly represent the best schools of the first class. Their latest catalogues contain the names of 676 young men; of these 370 live outside of New England, 47 live in the villages of Exeter and Andover, 147 live in cities and towns that presumably have good high schools, and 112 live in towns of less than 3000 inhabitants. The catalogue of one of the larger and more prosperous schools of the second class contains 194 names: 26 from beyond New England, 45 from its local city, 53 from towns of over 3000, and 70 from towns of less than 3000. The catalogue of a co-educational school of this class contains 317 names: 20 from beyond New England, 117 from the local town, 12 from towns of over 3000, and 168 from towns of less than 3000. Although full data are not available, it is far within the truth to say that less than twenty per cent. of the total enrollment of the private secondary schools comes from towns that maintain a high school giving even passable preparation for college.

The most direct way of determining to what extent the

high schools are meeting the wants of those who wish to enter college seems to be by a comparison like that given above. In order to ascertain what confidence the colleges have in the work of the public schools, each principal was asked to report how many of his pupils had entered college upon his certificate within the last three years. The replies were nearly as complete as to the first question, and are given below.

TABLE II

PROPORTION OF HIGH SCHOOL STUDENTS ENTERING COLLEGE UPON CERTIFICATE

	Number reported entering colleges that accept certificates	*Number admitted by certificate*	*Per cent.*
Maine	262	45	55
New Hampshire	144	112	78
Vermont	151	106	70
Massachusetts	579	334	56
Rhode Island	138	104	75
Connecticut	107	78	73
Totals	1381	879	64

Others—perhaps five per cent. of the total number—were admitted partly upon certificate. Though the proportion admitted from private secondary schools might vary somewhat for the separate States from that given above, the general average for New England would probably be about the same. Without doubt, the colleges that accept certificates admit two-thirds of their New England students in this way.

The surest criterion of the status of schools of any kind or grade is found in the equipment, experience, and permanency of the teaching force. The data upon which Table III is founded are so nearly exhaustive—within the limits chosen—that its conclusions may safely be accepted as final. Those reported in the right-hand column of the Table have taught

in the same school from five and one-third to thirty-seven years: the average term of service of these would be nearer ten years than five. No account is taken of special teachers of music, drawing, or manual training.

TABLE III

SHOWING THE EQUIPMENT, EXPERIENCE, AND PERMANENCE OF THE TEACHING FORCE IN THE PUBLIC HIGH SCHOOLS

	Total number reported	*Per cent. who are college graduates*	*Per cent. who have not more than a high school or normal school education*	*Per cent. who have more than three years' experience*	*Per cent. who have more than five years' experience*	*Per cent. who have taught more than three years in their present school*	*Per cent. who have taught more than five years in their present school*
Maine	120	47	25	74	61	43	28
New Hampshire	74	66	15	67	47	48	23
Vermont	59	51	32	65	42	24	12
Massachusetts	658	56	18	84	73	55	42
Rhode Island	69	66	21	80	56	47	33
Connecticut	156	52	16	71	64	52	31
Average		56	21	73	57	45	28

There is no reason for believing that the private secondary schools would as a whole make a better showing; on the other hand, there are several facts that tend to indicate the reverse. It would not be wise, however, to make any definite assertion without full reports, and these some of the private schools are loath to give.

The status of the high school in New England may be briefly summarized as follows:

It is generally conceded that it gives, to those who do not go beyond the secondary school, a better education than other schools offer them. The public schools are far from perfect, but new attempts to compete with them are not commonly successful.

The public high schools annually prepare for entrance sixty

per cent. of the New England students who are admitted to New England colleges. The wide extent of the privilege of certification that the colleges grant them is an evidence that their students are prepared to do the work that the colleges demand. The *personnel* of their teaching force is not surpassed, and possibly not equaled, by that of other schools of like rank within the same six States.

The indications are that the development of the high school is more than keeping pace with the growth of New England in wealth and population.

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IV

RELATION OF ARITHMETIC TO ELEMENTARY SCIENCE

The introduction of elementary science into the grammar and primary grades of the public schools is destined to mark an important epoch in the history of school-teaching in this country. The scope of the work included under the head of natural science is so great that anything like a general introduction of it into the lower grades will necessitate a thorough reorganization of the course as it has long existed and now stands. The greatest problem at this time, therefore, is one of readjustment, and it is not easily solved; for the present course of study, as usually laid down, is fortified not only in the wisdom, but also in the prejudices and traditions of the past. The reorganization will be accomplished partly by a displacement of some of the studies once considered essential, but chiefly by a readjustment of the parts so that the course will form an organic whole.

In this age of doubting and questioning, when the search-light of reason is turned upon every creed and custom, the assumption is that unless a subject can show a stronger reason for its place than may be found in the homage it has received in the past, it will have to give way. Not much room can be hoped for, however, in this direction, for experience has shown the desirability of retaining in the course the greater part, by far, of all that is now taught. If any new subject, therefore, is to enter the sacred circle of the present curriculum, it must show itself capable of entering into organic relation with most of the subjects already there.

That a full line of science work is soon to be a part of the regular school programme no one can any longer doubt; and the question which must be settled for the teacher, and by the teacher, is, what relation does it bear to the work already

being done? The basis upon which the answer must rest is found in the nature of mental action. In mind movement we may logically, if not actually, discern the thought, and the form embodying it or through which it is expressed. All studies, then, naturally fall into two divisions which may be distinguished as *thought* studies and *form* studies. As it is difficult to conceive, much more to define, thought independent of the form through which it is expressed, so it is difficult if not impossible to exactly define and precisely distinguish thought studies from form studies. Logically, such a distinction does exist; actually, however, in ideal educational methods it does not. How far we are and have been from such an ideal, the present bootless pursuit of pure form work will testify. Form studies have always been held to be of great value as a means of discipline; thought studies are those which deal with knowledge that is in itself intrinsic, with knowledge which is of present absolute worth to the possessor independent of the form by which it is gained and retained. Thus one may learn with varying clearness, by means of a model, a drawing, a painting, a written or oral description that alcohol in large quantities is injurious to the membrane lining the stomach. This knowledge is of intrinsic value to the individual, and is the same in kind, though not in degree, by whatever means it has been gained and is retained.

Logically distinguishable from these thought studies—but not actually separated from them—are what may be, for convenience, termed form studies. Form studies include all the different modes of expression: making, modeling, painting, drawing, written language (associated with which are reading and spelling), oral language, form, and number. The relation of form studies to thought seems to be this: external energy, referred to some object as its source, arouses to activity the nerve centers, and the individual then vests this externality—the source of the energy—with color, form, outline, size, weight, density, odor, and all other distinguishable properties, according to the sense or senses through which the energy

acts. Thus, from some object, energy of a certain kind reaches a nerve center through the eye; the mind then vests the object—the mediate source of the energy—with color. Again, the object is placed in contact with the finger tips; now the energy, of which the object is the source, reaches a nerve center through the sense of touch and the mind vests the object with form and density, and so on throughout the entire course of observation. This action of the mind may be guided somewhat by oral or written description, and by a careful comparison with facts already in experience, and thus, the thought gradually becomes a definite product in consciousness. At the same time, as it becomes a more closely approximating mental correspondence to the source of the energy, the thought clears up and becomes definite in consciousness.

It is of the greatest importance that all concepts be formed in the mind with readiness, accuracy, and completeness. The rate of mental development is absolutely determined by these three conditions. The readiness with which concepts are formed depends upon the alertness, the all-sided sensitiveness of the body to all the forms and varieties of energy, which impinge upon it and condition thought. Readiness is dependent primarily and largely upon physical and physiological conditions.

Accuracy in forming concepts depends upon two things: first, upon the power of the mind to distinguish all the different forms and varieties of energy from each other; as, for example, to distinguish colors from sounds, and to discriminate between blue and pink; second, it depends upon the mind's power to determine the limitations of the energy acting upon it; that is, the mind must not only measure or exactly estimate in some way the value of each form of energy in itself, it must also determine its relative value to all other forms with which it is associated, if the concept is to be clear. Thus, for example, when I look at a box, if I properly apprehend and estimate the energy received by the eye, I get a correct idea of its outline; and in the same way if I properly

estimate the energy received when it is placed in contact with my finger tips, I get a correspondingly definite idea of its density and form. This determination of the limitations of the energy is always done through a comparison with a standard measure. Accuracy is dependent upon the power of judging, and therefore upon psychic conditions. It is the absolute necessity for accuracy *that gives rise to the demand for the mathematical element in education.*

The completeness or adequacy of the concept is determined by the power of the mind to grasp and retain the relations which the various forms and varieties of energy bear to each other. This is also dependent upon psychic conditions.

The function of the teacher would therefore seem to be purely a directive one; he may create conditions, and, granting that their arrangement is the best possible (though for no two pupils, perhaps, would the arrangement be equally good), he has absolutely nothing beyond a directive power in determining the readiness, accuracy, and completeness with which the pupil shall gain a concept.

The weakest point in all teaching of the present time lies in that part which relates to the accuracy of the concept. All teaching must be quantitative, not alone qualitative, using these terms in the laboratory sense; and there is, therefore, a constant and positive demand for the mathematical element in education. It is the function of the studies of form and number to meet this demand for accuracy, and they can claim a place in the common school curriculum for no other purpose whatever. This classes them, then, from the pedagogical standpoint as *form* studies, as distinguished from *thought* studies, and it is as such that they are here to be treated. That two multiplied by two multiplied by two equals eight is not of the slightest consequence in itself; but when it is said that the box is two feet long, two feet wide, and two feet deep, the value of one's knowledge of the box is greatly increased. And when, still further, it is said that all the angles are right angles and that all the lines are straight lines, the mental correspondence is a close approximation to the real thing. Of

course to the educated mind, distance, angles, and lines are matters of experience, and the mere mention of the appropriate terms and units is enough to enable it to clear up the concept of the box. But the case is different in the young and inexperienced, in whose mind the notions of lines and angles and judgments of space and distance are almost totally wanting. The whole question at issue is, shall the attempt be made, first, by means of this, that, and the other ingenious device and by use of objects to which the child is more or less indifferent, to give the child the notions of lines and angles and judgments in number, to create in him a stock in trade which he may use when he finds occasion, or shall these notions be developed to meet the necessities arising from legitimate observation at the moment when the demand is most imperative?

In considering the question it is interesting and instructive to note that, within the memory of those now living, it was almost universally held that all form studies should be pursued in the beginning for their own sake: first, because of their extraordinary disciplinary value; and second, that the mind might early be provided with a lot of skeletons upon which to build flesh in after life. But there is to-day a considerable number of teachers, and the number is rapidly increasing, who believe that reading, for example, need not be taught except as the necessities of developing thought demand it, and yet, that it may be thus taught well; that to teach spelling it is not necessary to isolate all the words in the language and write them in columns in a separate book to be conned and committed; who believe that enough practice to teach writing, drawing, painting, and modeling will come in the proper use of the material used in connection with legitimate thought work. Some teachers have worked out the problem in one direction and some in another; very few or none have carried out the principle along all lines of form work. Enough has been done, however, to establish the validity of the principle and to show its practicability in connection with all the subjects named. As to tangible results, there has been

perhaps as much failure as success; but if there has been success in one instance even, and that, too, only under ideal conditions, the validity of the principle is established, the true ideal is furnished, and all we have to do is to work as best we may toward it. The failures have been wholly due to lack of skill in presenting the thought, or in the failure on the teacher's part to grasp the real scope of the thought to be presented.

The only subject which has not at this time yielded to the operation of the principle just enunciated is number. Arithmetic—and form also to a less degree—more strongly than any subject, stands intrenched in the dogmas and traditions of the past. So long has it been enthroned in every schoolhouse, and in the heart of every teacher, as *the* great subject to be taught, that it now stands aloof and apart in a state of almost complete isolation. When one looks back over his school-days, no other subject looms up in such proportions as arithmetic. It is the one thing which consumed his time and absorbed his energy. Goaded on by the promise of future reward, we unceasingly and unlovingly toiled. But now, when in later years we stretch out our hands to seize the promised reward, we find it turns to ashes. It is no wonder then that an outraged generation grown to the estate of manhood, should cry out against arithmetic and seek to drive it almost wholly from our schools. And still further it is proclaimed that the time spent upon number in the schools is wholly out of proportion to the demand made for its application in after life; that while little was received, now Heaven be praised, less still is needed; and the conclusion in either case is that the time given to arithmetic, number teaching, must be reduced.

It would be most interesting to stop here and scan the pages of the history of education to find how it is that arithmetic gained the prestige it has so long enjoyed. The reason is clear. The magnificent achievements in science, through the application of mathematics, of such men as Kepler, Newton, La Place, and others gave to humanity such splendid ideas of the members and forces of this universe, and rendered our

knowledge of them so clear and definite, that the world has ever since been awed almost into worship of even the means they employed. Think of the richness which mathematics possessed for such a man as Newton! his every calculation fixed for him a star in the heavens; it set the time and places of the planets, and measured the force which holds them swinging forever in their orbits. By the aid of mathematics, Newton was able, more than any other man from the dawn of creation down to his day, to penetrate the remote recesses of this universe and to read the secrets of the Almighty.

Turn now from the contemplation of such a mind, filled with this orderly array of knowledge gathered from every corner of the universe, to a consideration of the store in our minds. What has our mathematics done for us? Has it opened up and rendered clear for us anything in this magnificent world about us? Did the study of mathematics give us any clearer notions of the forces that focus upon us and condition our existence? Did our arithmetic put anything into our lives which gave us a broader and better outlook into nature, and rendered our existence freer from superstition and more neighborly with the truth? In so far as it has failed to do these things, we have been the victims of a fraud.

That there should be any attempt to decry arithmetic teaching in the schools, brings us face to face with a desperate situation. Those who believe that they see in the different studies of the common school the necessary and organic elements of a symmetric whole, must push forward to the rescue before some iconoclast rises from the long-suffering public and by some arbitrary act deprives us of the power to organize the reform. Those in the past who gave mathematics its place of honor among studies were driven to the study by their thoughts about the universe. By means of mathematical calculations, their indistinct notions became clear and definite ideas. So should it be with the pupils in the public schools; all thought studies actually demand mathematical work that thought itself may become clear. It is the function of form and number study—that is of the *mathematical element* in edu-

cation—to give accuracy and exactness to ideas; to render hazy notions clear, and to evolve the definite from the indefinite. The man who says that he can go through any and all walks of life without this mathematical element as safely as he can with it, is most blindly and grossly self-deceived. Nearly all, if not all, the failures of life come to us because at some point in the train of our calculations our ideas were not exact. The reason for our neglect in this direction is that we were not led to see the value of such accuracy in quantitative work when in school. Almost all school exercises are qualitative only; they do not demand *definite* amounts of anything. Despite the fact that arithmetic has in the past and does now as a rule take far more than its share of programme time, yet it may be safely affirmed that true education in accuracy, the cultivation of the mathematical powers of the mind, has been and is grossly neglected.

The long isolation of number work from everything else has not only been hurtful to all other subjects thus deprived of its assistance; it has proved to be terribly self-destructive. In trying to preserve itself upon its pedestal of self-conceit and self-sufficiency it has been driven to most absurd lengths to obtain materials for subject-matter, and it has pressed upon teachers methods of instruction that in many cases are simply senseless. It requires but a passing glance at any arithmetic that one may pick up to see that the subject-matter in arithmetic is as bad or perhaps worse than it ever was in the case of reading, drawing, or writing. It is not an exaggeration to say that at least ninety per cent. of all the exercises given in an average arithmetic fall into one or the other of two classes: 1st, those which deal wholly with abstract operations, and 2d, those which deal with material absolutely outside the experience of the pupil. A few examples will illustrate this point. Open any arithmetic and count the weary pages of such problems as "what is $\frac{1}{3}$ of 6? $\frac{2}{3}$ of 9? $4+8$? $13-4=$? $\frac{1}{3}+\frac{1}{3}=$? $\frac{1}{6}+\frac{1}{7}=$? $2\frac{2}{3}-\frac{3}{4}=$?" *ad nauseam.* It serves no purpose for the teacher to say that he or she can create and sustain an interest in such work. Everyone, doubtless,

has been very much interested in just such problems, but if they are of intrinsic value, then why is it that all interest in them is lost the moment the pupil reaches the years of reason and accountability? A subject of intrinsic value never loses its interest. We gain a little from it when we are young, and that interest deepens and intensifies with age. The truth is that the young mind is so inherently active, it is so ready to grasp everything, that we frequently mistake the buoyancy of its self-activity for genuine interest in the subject in hand.

Turning now to the second class of problems alluded to above, namely, those which deal with material beyond the experience of the pupil, the same dreary waste of pages may be found. It is within the bounds of truth, perhaps, to say that nine-tenths of all the so-called concrete problems found in our arithmetics deal with questions of values. This is a mistake as fundamental as it is singularly perverse and unfortunate, as a little consideration of the subject of values will show. Value is wholly relative, and it grows out of the fact that man is a social being. From the very nature of man's social relations there must arise necessities for exchange among the different members of the community, and thus business relations are established, and, growing immediately out of this is the question of value. Now it is universally conceded that, while adult man willingly subjects himself to the laws which the necessities of his social relations place upon him, the child does not recognize any such bans. And since his notion of business necessarily develops much later, it follows that his idea of value under ordinary circumstances must be late in maturing. This is merely the statement of a fact with which all are more or less familiar. An average third grade boy on the south side of a building on a warm spring day would not exchange his pocketful of marbles for a corner lot unless he saw immediate prospect of reconverting it into marbles again. And yet that same boy through all time has been expected to solve problems relating to the sale of lands and estates with all the ease of a real estate agent of long experience. They are not much older when they are expected to solve problems relating

to banking, taxation, insurance, and stock exchange, of the real nature of which they can have absolutely no conception whatever.

Of course it will be maintained that the notion of value must be developed. This is true, but let no one deceive himself by supposing that he is developing the idea of value in his pupils when he is having them solve problems in which incomprehensible values are handled. Nor can the teacher materially hasten the time when the idea of value can be gained. It depends absolutely upon experience, and therefore requires time and can come only with age. The value of a dollar is known only when it has been earned. The time is certainly not perceptibly hastened by the early introduction of toy money and imaginary bargain counters. These devices have about as much to do with the notion of developing value in the mind of the pupil as the skin of a stuffed monkey has with developing an idea of the South American fauna. Most of such devices are nothing but the stuffed monkeys of mathematics. This fatal mistake of filling arithmetics with purely abstract problems, and also the so-called concrete problems which deal with incomprehensible material, has reduced the learning of arithmetic on the part of the pupil to the memorizing of a string of disconnected exercises which cannot be remembered or applied because they are not associated in the mind with any intrinsic thought, and it has driven the instructor to employ a vast multitude of catchpenny devices for the purpose of teaching a few very simple processes. It is one of the greatest monstrosities of modern education that the application of processes so few in number, and so simple as those in arithmetic, should be so little known and so poorly understood by both pupil and teachers.

Just how much number work must go with science work is the question that must now be considered. As yet it may be too much to say that all mathematics must be *science* mathematics; for every subject which demands accuracy in thought must of necessity furnish mathematical material of some kind;

but it is not too much to affirm that all science must be *mathematical* science. Actual advance in science work is not possible without the introduction of the mathematical element of accuracy in quantitative work. The children may observe a great deal, but they will not progress unless they, in the appropriate way, accurately measure as they go. As science work is now done in most cases, the pupils are getting a great deal of color work and written and spoken language; but they are not getting exact and definite concepts because the mathematical element is almost wholly wanting. They are in the precise condition of one who learns the color and kind of material in a box, but learns nothing of its exact form, size, or weight. Their written and spoken language, and to some extent their drawings, show this in the great paucity of mathematical terms and in the lack of exact proportion of parts. In speaking or writing they say "few," "many," "some," "about," "nearly," "somewhat," "I think," "I believe," "I should say," etc., etc., all of which expressions and terms indicate a lack of clearness and definiteness of thought. They are seldom confident enough in their work to make a direct and unqualified assertion respecting any observation. This tends to make the observation more lax, and forms in the pupils ruinous habits of carelessness and inexactness.

It is one thing to point out an inherent weakness in any system of instruction, but it is another to suggest a remedy, and usually a much more difficult thing still to apply it. The ability to teach the arithmetic, in connection with any science work, which is necessary to render the outline and details of the experiment or observation clear, presupposes the clearest possible insight on the part of the teacher into the central thought, point, and scope of that experiment or observation. Failing in this depth of insight, the teacher will not feel the demand for number (which is only another way of saying that he sees nothing to number), and all problems will be given at random, and consequently they will not help to clarify and develop that central thought. In order to understand more clearly the relation of number to science work, it is necessary

at this point to inquire into the nature of the chief operations in arithmetic.

The mathematics in connection with science work naturally divides itself into two parts. These are, first, what pertains to the collection of accurate data, and second, that which pertains to comparisons necessary in making generalizations. By the collection of accurate data, it is meant that the pupil shall in every case find by the appropriate means the exact limitation of his observations. This may be illustrated as follows: if he is studying the constituents of soils, he must not be permitted to say, "It is largely sand or gravel," or that the organic matter is small in amount, but he must be required to employ such means as will show him the sand, gravel, etc., in definite and exact amounts. Again, in studying the color of butterflies, for instance, in its relation to the environment, the pupil must not be allowed to put his results in the usual indefinite way, "I think in most cases the butterfly seeks protective surroundings," but he must be required to say in how many cases he has seen the butterfly actually do so. In studying the growth of plants he must not be allowed to say, "The tree averages about so much," but he must by actually measuring find out, as closely as may be, what the average growth is. In short, the first question which both teacher and pupil must have uppermost in mind, when contemplating any experiment or observation, is, "What is the appropriate means of measuring which will enable me to precisely determine the limit of my observations in this case."

After the data have been collected by means appropriate to the nature of the subject and the capacity of the child, the work of comparison begins. This is the fruitful, the really educative part of the work. The collection of data gives skill and requires nicety in manipulation, it is disciplinary, but it is not educative in a broad sense. It does not give the broad concepts that come only from comparing results so collected.

In making comparisons there may be recognized four modes, each distinct in character from the other; nevertheless they are modes of comparison, because they each so present data

to the mind that the relations between them may be seen. These four modes in their cumulative complexity also bear a natural relation to the development of the child's mind. The first mode of comparison which a child uses is where all the quantities are considered as wholes. Under this mode the genesis of the four fundamental operations as means of comparison may be illustrated by the following examples: the child has, for instance, two sticks of different lengths; his very first comparison respecting length is expressed by saying either, "One is longer than the other," or "One is shorter than the other." In the first case he is looking at the long stick and thinks, "It is like the short stick with more to it." This is his initial thought in addition. In the second case he is looking at the short stick and thinks, "It is like the long stick with part of it taken away." This is his initial thought in subtraction. Very soon he is able to say exactly *how much* must be added to the one or taken from the other, and at that stage the definite processes of addition and subtraction begin.

A little later, as he looks at the short stick, he thinks, for instance, "If I could put two or more of my short sticks together," they would then be like my long stick. This is his initial step in multiplication. Or, looking at the long stick, he may think, "If I could cut it in two or more, I should then have two or more pieces like the short stick." This is the beginning of division. In these first steps in comparison the child naturally employs whole numbers in the four fundamental operations given in the books as addition, subtraction, multiplication, and division.

The second mode of comparison is by considering one of the quantities directly as a part of the other. The child now says, "The short stick is one-half the length of the other." This is his first step in partition, and at this stage he is ready to begin the study and use of fractions.

In the third mode of comparison the child may use either quantity as the standard, but he must be able to conceive of it as being represented by unity. Thus in two trees, if one

is twenty feet high and another eighty feet, he must not only be able to see that one is sixty feet higher than the other; that it is four times the height of the other; that the shorter is one-fourth the height of the taller, but also that, if the shorter is represented by one, the longer is represented by four; also that if the longer is one, the shorter is one-fourth. This mode, including all of what is given under ratio and proportion, is of more difficult application than either of the others and should be introduced later in the work of the pupil, but not so late as might be inferred from the place usually assigned to it in books on arithmetic.

In the fourth mode of comparison the pupil must be able to grasp what has been described in the first, second, and third modes, and must, besides, be able to conceive of one of the quantities being represented by one hundred. Under this mode are included all the operations that belong to percentage in the text-books. If in the examination of soils he finds ten grams of gravel in fifty grams of soil, the pupil will say that if the soil is represented by one hundred the gravel will be represented by twenty; that is, twenty per cent. of the soil is gravel.

From this discussion it will be seen that as early as the pupil is able to make a definite observation, he has at his command, and does in fact naturally employ, a mode of comparison corresponding to his stage of development; also that each mode of comparison rests upon a corresponding mathematical operation; and further, these operations tend to clear up and define his ideas of the subject he studies. It will also be observed, still further, that with the exception of such exercises as are intended to be used for the purpose of fixing the units of measurement, the whole of arithmetic is included under these four great modes of comparison. It therefore follows that any subject or subjects which can furnish a sufficient amount of legitimate material to provide problems enough in these four modes of comparison, will meet even the present demand for arithmetic in the schools. The amount of material actually demanding such number work, which may be

gathered from the beginning in the domain of natural science, is practically only determined by the intelligence of the teacher in directing his pupil, and by the limitations imposed by adverse conditions under which most teachers labor.

A series of problems is here appended to illustrate the character of the questions and the form under each mode of comparison. The teacher will see the necessity for others. The test which the teacher must apply to such problems is, first, are they good science? that is, will their solution tend to clear up the concept sought? and second, are they good arithmetic? that is, do they involve any absurdity in calculation. If they fulfill the legitimate demand of science, and do not outrage the canons of number, they should be admitted as properly educative factors.

I. GERMINATION: *absorption of water by seeds*

1. How many grams of water will ten grams of seeds absorb? 2. Ten grams of seeds absorb what part of their weight or bulk of water? 3. What is the ratio of the weight (or bulk) of dry seeds to the weight (or bulk) of water they will absorb? 4. Dry seeds will absorb what per cent. of their weight of water? 5. Precisely similar problems in comparing results gained from study of different kinds of seeds.

II. STUDY OF SOIL: *absorption of water*

1. Twenty grams of soil will absorb how many grams of water? 2. Twenty grams of soil will absorb what part of its weight of water? 3. What is the ratio of twenty grams of dry soil to the water it will absorb? 4. Dry soil will absorb what per cent. of its weight of water? 5. Precisely the same questions relating to subsoil, sand, etc., and comparisons between them.

III. MECHANICAL CONSTITUENTS OF SOIL

1. Fifty grams of soil contain how much sand? 2. What part of fifty grams of soil is sand? 3. What is the ratio of sand in fifty grams of soil? 4. In fifty grams of soil what per cent. is sand? 5. Precisely similar questions in regard to subsoil, loam, etc., and comparisons of results.

IV. RELATION OF ANIMALS AND PLANTS AS SHOWN BY A STUDY OF LEAVES

1. In fifty leaves, how many have in some way been used by insects? 2. In fifty leaves, what part has been injured by insects? 3. In fifty leaves what is the ratio of injured leaves to those uninjured? 4. In fifty leaves, what per cent. has been injured by insects? 5. Precisely similar questions growing out of a study and comparison of different trees.

V. METEOROLOGY FOR A MONTH: *study of rainy days*

1. How many days have been rainy? 2. What part of the entire month has been rainy? 3. What is the ratio of dry days to wet ones during the month? 4. The number of wet days during the month is what per cent. of the entire number? 5. Precisely similar problems arising from a study of different months and the meteorological conditions of temperature, air pressure, etc.

VI. ANIMAL LIFE: *protective coloration*

1. In twenty-five instances, how many times did the same butterfly alight in situations where its color was protective? 2. What part of the whole number of times in twenty-five instances did the same butterfly seek protective situations? 3. In twenty-five instances, the number of times when the same butterfly sought protective situations bears what ratio to the number of times when the situation was non-protective? 4. In what per cent. of twenty-five cases did the same butterfly seek protective situations? 5. Precisely similar questions relating to other insects and comparisons growing therefrom.

These six sets of problems will be enough to suggest the abundance of mathematical material in any phase of elementary science work and give some idea of how it is to be used.

Before leaving the subject a word should be said about the method of teaching upon this new basis. New wine must not be put into old bottles. The same principle precisely holds in this case that is already recognized to some extent and obeyed

in teaching other subjects. Formerly, spelling, reading, etc., were taught as ends; now *thought* is the end and they are incidental. The fatal mistake that has been made is in teaching the *thought* and making the spelling, etc., accidental. There is a mighty difference between the incidental teaching of form subjects and the accidental teaching of them. So now, in this number work, the teacher must clearly work for the intrinsic thought and make the teaching of the arithmetical operations incidental, but by no means accidental. These operations must be just as thoroughly taught as ever before; they will be more thoroughly taught in far less time, too, when teachers really grasp the subject matter in hand. The reason for this faith has its source in the pedagogical fact that in the new order of things the intrinsic thought of the subject will demand the operations; and the pupil, if properly directed by the teacher, will feel this actual demand, and his mind will work for them at its highest possible tension. We lose enormously by working at a subject with our pupils when their minds have a low tension—a low potential, to borrow a term from physics. We all know from experience and observation how quickly and strongly even seemingly dull minds grasp facts, principles, and operations when they are rendered really alert by an actual desire to get the thought. This, then, is the first duty of the teacher in the present case: stimulate the mind to its greatest activity with the subject matter, and then definitely direct this activity by means of the various arithmetical operations. Questions prepared in connection with the science work, taught from any other motive, will render them as dead, and the pupils as listless as the most arid arithmetic ever used.

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V

TESTS ON SCHOOL CHILDREN

We have come to recognize clearly the necessity of being sure that children possess no defects that incapacitate them for school work or for which allowance must be made in instruction. In a rough sort of way we know a trifle concerning the child, but there is no question that in every school there is some child with a defect or abnormality that has been overlooked by both parents and teachers, but which greatly interferes with the proper pursuit of his studies or even makes school work a torture. Whenever such a defect exists it ought to be known and provided for; and to discover such defects we ought to have some system of testing the children in various ways. More than once a child has been considered stupid when really he has had great difficulty in hearing what has been said to him. More often still does a pupil find trouble with the singing, when in fact he cannot tell two notes apart within an interval of a couple of tones. Many a teacher is exasperated at the distorted drawings produced, when there was an inherent defect in the power to estimate distances by the eye, which could only be cured by special practice with reference to it.

Many of the troubles of children could be discovered by a regular periodic system of testing, and, having been discovered in time, very many of them could be provided for or could even be cured by a proper training. Such a system of testing ought to include bodily measurements and a thorough examination of the condition of the eye, the ear, the chest, etc. But in addition to the bodily measurements there ought also to be tests and measurements of mental power. The question of bodily measurements is reasonably well understood; what I wish to call attention to, particularly, is a set of the most simple tests on the mind of the child. I rather think

that we generally expect from bodily measurements results and deductions which they do not pretend to furnish. Bodily measurements give us data in regard to the condition and growth of the body and should be judged on that basis only.

The prime object of measuring and testing children periodically, say at the beginning of each school year, is to determine whether their minds are in the proper condition for school work, that there are no underlying defects of sensation or intelligence that must be looked out for in the course of instruction, and also to determine that the child has developed at the proper rate. Of the immense scientific value of the records of such tests on large numbers of persons I need not speak.

Of course, these tests that I refer to briefly here are to be modified and adapted to the different degrees of intelligence, as shown at the various years of development and in the various grades in school. I have avoided anything like expensive apparatus; in fact, there is not one of the tests which any teacher with a little ingenuity cannot make at a trifling expense. Possibly some day there may be invented cheap forms of the various pieces of psychological apparatus, or possibly some school board, becoming convinced by practical trial of the value of these simple tests, will be willing to spend a few hundred dollars in this way.

I TESTS ON THE MEMORY

The first test proposed is a test of the condition of the auditory or ear memory. This can be made by reading off a number of meaningless syllables to the child and asking him to repeat as many of them as he can remember. For example, I read off to a class the following ten syllables, and then ask each pupil to repeat to himself as many of them as he can remember:

ba re ma li go pu ko li so tu.

Perhaps one child will remember five; in that case his auditory memory is expressed as a fraction of the task set before him. If he remembered five syllables out of ten, he has

attained $\frac{5}{10}$ of perfection. Someone else will have remembered seven syllables, someone eight, or three, etc.; these persons have succeeded to the extent of $\frac{7}{10}$, $\frac{8}{10}$, $\frac{3}{10}$, etc.

Or the result may be expressed in another form. Suppose that it has been found, from long experience, that the children in a certain class or at a certain age can remember on an average five out of the ten syllables; then that number may be taken as the denominator, and each separate child's memory can be expressed as a fraction of the average. Suppose a child remembers three out of the ten; then you would say that he has an auditory memory equal to $\frac{3}{5}$ of the normal. This would be a relative measurement, whereas the one first given may be called an absolute one.

Of course, the difficulty of these syllable tests is to be modified for each grade as may be necessary. In the highest grade probably ten syllables, once read, would be about right. In middle grades probably ten syllables twice read, or even three times read, would be the proper test. In still lower grades it would be best to use only five syllables, and in the lowest ones they should be read over several times.

The next test to be made should be on the visual or eye memory. For this purpose I use ten meaningless syllables arranged in some convenient form on a card. I hold up such a card to a pupil for five seconds, just long enough for him to read the syllables through. It will be necessary to expose the card for a definite time, in order that the test may be repeated at different times under the same conditions. Perhaps six of the syllables will be remembered. Then the memory showed an ability of $\frac{6}{10}$ of the maximum. The results are treated in the same way as before, expressing them in absolute numbers or as fractions of the average. Also, as before, the difficulty of the test may be modified for the different grades by changing the time of exposure and the number of syllables.

As a third test I take the combined visual, auditory, and muscular memory. I show a card as before, but the syllables are to be read over aloud. In this way the child not only sees and hears them, but he also makes the muscles of the larynx,

tongue, etc., go through a set of motions which are more or less likely to be remembered.

A fourth test combines the eye memory, the ear memory, and the muscular memory of the hand. Let a card with a number of syllables be shown and the child required to write them down on a slate. This teaches the syllables to the hand also. Then have the slate cleaned and test how many of the syllables the child can remember.

Finally there is another test of the memory aided by the intelligence, which is of great importance and which ought to be combined with the previous tests. Suppose one reads off to the child ten sentences, each of which states a simple fact. He should then be asked to repeat as many of the facts as he can without regard to the words used. That is to say, his memory for facts, not words only, is tested. Such sentences as these should be used: *Hats are convenient; Air is a necessity; The horse is useful;* etc. Combinations of words that are likely to strike the attention or could be gotten right by chance are to be avoided; *e. g.*, such a statement as *The horse is green* could not have been forgotten; or if *Ink is black* is used, there would be a chance of the child's getting it right even if only the word *ink* had been remembered.

2 EXTENT OF CONSCIOUSNESS

For this, I propose only one test, namely, that invented by Cattel at Leipzig and used in his psychological investigations. Instead of using apparatus, I will put the test in simple form that can be copied by anyone. Ask the child to look at the red dot on a card held before him. Behind it is another card with a number of letters on it. Jerk the first card aside for an instant, so that he catches only a glimpse of the letters. Then he is to tell how many letters he has seen. "About five" is the usual answer. He actually saw all the letters as far as the physical act of seeing was concerned; but he was not able to grasp so many facts at once in consciousness. For lower grades the test may be modified by jerking the first card away a number of times.

3 EYE SPACE

This has reference to space as judged by the eye. As a first test it is well to lay before the child a card or a piece of paper with a vertical line on it and put a sharp pencil in his hand. He is to mark off the middle point of that line. That mark will never be in the correct place; it is always a few millimeters one side or the other of the middle. It is generally above the middle. If the line is ten centimeters long and an error of two millimeters is made in halving it, the error is four per cent.

The same test is to be made with a horizontal line. Our estimation of visual space depends on the muscles of the eye, and this measurement gives an indication of their proper condition. I do not need to call attention to the practical applications of this test to drawing.

4 MOTOR ABILITIES

Many measurements might be made of the time and extent of the motions of the child, but these would require more or less expensive apparatus. I will propose only such as can be made by everyone, namely, tests on the accuracy of the movement of the arm and hand.

The first is on accuracy in touching a given point. I place a card on which there are several small dots before the child, and ask him to touch one of the dots with the pencil, the arm being held free above the desk. His hand trembles and shakes more or less, and he is sure to make some sort of an error. After the dot has been made, take a ruler or a pair of dividers and measure off the distance between the original dot and that made by the child. In every case we can see by the eye that we make such an error; if we could only hold the pencil steady enough we could hit the dot every time. So the test is one of the steadiness of the arm and has nothing to do with judgment by the eye.

Another very important measurement is the following: lay before the child a card or a sheet of paper on which there are two dots, and call upon him to connect the two by a straight

line. The card is to be so placed that such a line will be horizontal. To measure the error of the line which he will draw, lay a straight ruler across the dots, and with a pair of dividers find the amount of his greatest deviation from the true straight line. The same test is to be made with the lines vertical.

5 EYE TESTS

The tests on the eye are probably the most familiar. The first test is that for sharpness of vision, that is, to measure the least visual angle which an object must cover in order to be seen. This can be tested on even a very young child by means of a card with the letter E on it in various positions, finding out at what maximum distance he can tell you in which directions the various E's point. Then, according to Snellen's formula,

$$V = \frac{d}{D}$$

in which V is the sharpness of vision, D the distance at which the letters can usually be read, and d the distance at which the person tested can read them.

This test is used in many different forms. Snellen's book gives a selection of test paragraphs in various languages and of different sizes. In Roberts's *Manual of Color Blindness*, there are four such sets with the normal distance in feet and inches printed over each; instructions for use accompany them and the deductions to be drawn from the diagnosis are stated. There are several tests mounted on pasteboard for hanging on the wall. One is with English letters, the normal distances being given in feet. Another of the same kind is in German, with the distances stated in meters. A test by Dr. Bennett is well suited for school use, the normal distance being five meters or a little over sixteen feet. All these cards, as well as the colored worsteds to be mentioned and the various apparatus for the other eye tests, can be obtained in the standard forms from Meyrowitz of New York.

Another test to be made is that for astigmatism. There is

a card of letters composed of parallel lines which has the angle of astigmatism over each letter. When the lines of any letter, instead of being separate, appear to blur over the vacant spaces, astigmatism in that direction is indicated and must be corrected by suitable lenses. For astigmatism of the cornea, there is provided a keratoscope, which makes possible the instant detection of that defect by observing the distortion of the circles as reflected from the surface of the eye.

The need of the test for color-blindness is universally admitted, although there is really no reason why the other tests are not just as important. The first, and in my opinion the best, set of colors for the test is that resembling the original Holmgren test. The possession of just the proper colors is a very important point. The standard colors as selected by Dr. Joy Jeffries can be obtained from Ceiley & Wright of Boston.

I use a pile of the colored worsteds. To perform the test rapidly I pick out a number of skeins of a certain color, say green, and then throw them back and mix them with the pile. The person tested is now to pick those skeins out again. If the vision is normal, this will be done without difficulty; but if a red skein is chosen, then there is red-blindness present. I then take a skein of a second color, say purple, and have those like it chosen. If instead of the purple colors, alone, the blue and violet colors are picked out by the subject, then there is red-blindness present; but if only green and blue are chosen, there is green blindness. Further particulars are to be found in Jeffries's manual on this subject.

6 HEARING

Tests on this point are sadly neglected. Teachers have continual trouble with the singing of the children, yet it can be affirmed that in a large percentage of the cases the trouble lies in the hearing. Nevertheless, outside of Germany, I believe that systematic tests have never been carried on. Nothing extensive or accurate need be attempted; it is enough

to make sure that there are no radical defects in the children's hearing.

In the first place, we do not hear tones above a certain pitch, and this upper limit of pitch is different for each individual. By the use of a little whistle one can tell exactly where a person's hearing stops. In the case of children, however, all that is needed is to make sure that the hearing for tones does not stop within the limits of the piano. As a first test, every child ought to be tried as to whether he can hear up as far as the piano goes.

Likewise we ought to see that he can hear down as far as the bass notes on the piano. Moreover, it would be well to be sure that he is not deaf for certain particular tones. This can be done by running over the scale on the whole range of the piano.

The next test to be made is that for sensitiveness to variation of pitch. We want to know how small a difference in the pitch of a tone the child can distinguish. In the psychological laboratory this can be measured accurately, and some persons have been found who can detect a difference of $\frac{1}{100}$ of a vibration. In school it will suffice if we make sure that the child can distinguish between any two adjacent half-tones. Many children cannot distinguish between a tone and its sharp. A few of these tests, made recently, gave especially interesting results. One little girl, six years of age, when asked to distinguish between two adjacent tones, answered wrongly as many times as she answered correctly. She answered wrongly six times out of ten with half-tones. When asked which of two notes a tone apart was the higher, she answered correctly seven times out of ten, but with half-tones she seven times thought that the lower tone was the higher. Another girl, of exactly the same age and in the same grade, answered every question correctly.

The next test on hearing is that made by physicians for deafness. A simple, though not very accurate, way to carry it out is to take a watch and, beginning at a distance from the ear where the watch cannot be heard, bring it closer till it is

just heard. Then measure off the distance from the ear, and treat the results as in previous cases. You will first have to determine by trial what is the average distance at which the watch can be heard. If D represents this distance and *d* that at which a particular person hears it, then his acuteness of hearing can be represented by

$$H = \frac{d}{D}$$

In connection with hearing I would strongly urge that the child's ability to sing a given note be tested. Strike a key on the piano and ask him to sing the same tone. If you have a musical ear at all, you can tell whether he hits anywhere near it or sings a tone or two away from it.

7 CUTANEOUS SENSIBILITY

Lombroso has found that the sensitiveness of the criminal class is very much below that of the average man. This is shown perhaps more clearly than elsewhere in the sensitiveness of the skin. We can have no better test of this sensitivenses than the use of something that causes a slight degree of pain. Send a current from a battery through the skin, beginning with a very weak current and increasing it up to the point where the person tested just begins to feel pain. Read off the amount of the current. The differences between the various constitutions of the children would come out in a very marked way.

It is worth while considering whether the great cruelty exhibited by some schoolboys may not be due to the fact that their sensitiveness for pain is very small, and so they cannot have any idea of how animals or other persons suffer when tormented.

There is one test on the skin which all teachers can make, a test of the faintest perceptible pressure. For this there is used a set of little cork weights, proceeding from one centigram, each weight being twice as heavy as the last one. I can just feel the smallest one when it is placed on the palm of the

hand. Now, if a child cannot perceive that weight, it will be necessary to try the larger weights in succession. The size of the weight that can just be perceived will indicate his sensitiveness to pressure.

8 SUGGESTIBILITY

The last test I want to propose is one which we have just invented at Yale. We all know how easily children in general take up a suggestion and what curious exceptions to the rule there are. One little girl will believe everything you tell her without question, and will imagine she sees or feels anything that the teacher suggests to her; another child will persistently doubt the teacher's word, will be a skeptic on all questions, and if he grows up to be a philosopher will probably doubt the evidence of his own senses. How convenient it is to have a means of measuring the suggestibility just as we measure the reaction times and the memory! Here is the way in which we propose to do it: through a thin wire I send an electric current just strong enough to make the wire slightly warm. I ask someone to put his finger on the wire before I send the current through, and taking out my watch I note the second at which I send it through. He is to tell me how soon he feels the slightest warmth and I note how many seconds it takes him. Then I perform the test twice more, and note down the time as before. But I hold the connecting cords in my hand, and the current can pass only when the two points touch. On the last two times I did not let the points touch. and so the wire did not in reality get hot at all, and the sensation which the person had was the result of my suggestion that the wire was going to get hot. The time it took for that suggestion to work will give some idea of the person's suggestibility.

The above hints or suggestions are given because they are simple and practical. There are many other tests, just as valuable, that may be made with a little care and at a small expense.

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VI

EDUCATION IN FOREIGN PERIODICALS

Ernest Renan

GABRIEL MONOD IN THE "CONTEMPORARY REVIEW"

"The moment is not yet come for appraising the work of Ernest Renan, and his contribution to human thought. But it is nevertheless impossible, after saying so much of his life, not to attempt in some way to indicate the causes of his immense renown, the place he holds in our own century, and the way in which he merited the exceptional honors which France has paid him at his funeral.

"One merit he had which no one dreams of disputing. He was beyond comparison the greatest writer of his time; and he is one of the greatest French writers of all time. Brought up on the Bible, the Greek and Latin classics, and the standard authors of France, he had accustomed himself to a fashion of speech, at once simple and original, expressive without oddity, and supple without languor; a style which, out of the somewhat restricted vocabulary of the seventeenth and eighteenth centuries, could sufficiently furnish itself to render every subtlest shade of modern thought—a style ample and sweet beyond all parallel. You find in Renan bits of narrative, of landscape, of portraiture, which are models for all time; while his philosophic and religious pieces present in their most delicate gradations of atmospheric perspective thought and sentiment and dream. If now and then, in his later writings, the attempt to modernize has led him into small errors of taste, these false notes are few and far between, and, generally speaking, the propriety of expression equals the delicate poise of the style and the consummate skill of the construction. Renan will outlast all the other authors of our century, because he has equaled the most illustrious of them in force and picturesqueness while surpassing them in simplicity and artistic sensibility. Beside him, Chateaubriand seems a mere declaimer, Lamartine limp and redundant, Victor Hugo brutal and monotonous, and Michelet restless and unequal.

"But the real triumph of Renan's style is this: that he has

never been a stylist; he has never treated literary form as an object in itself. He had a horror of rhetoric; and what he understood by perfection of form was the means of presenting the thought in all its force and individuality, in the fullness of its character, 'in its habit as it lived.' The simplicity of his style was just the reflection of his simplicity of nature; its force and its brilliancy were derived from the plentitude of his knowledge and the abundance of his imagination.

"In the region of the learned studies Renan has not been a creator. Neither in philology, nor in archæology, nor in exegesis, has he made any of those great discoveries, or founded any of those systems, which renew the face of science. But no other man can lay claim to an erudition at once so universal and so precise as his. Language, literature, theology, philosophy, archæology, and even natural history—no branch of human knowledge was alien to him. His profound acquaintance with the past, together with the magic gift which enabled him to clothe it with flesh and make it stand upon its feet, made him an incomparable historian. This is his highest glory. In a century which is before all things the century of history, in which arts and literatures, religions and philosophies, are chiefly interesting as successive manifestations of human evolution, Renan had the supreme historic gift. In this he is a true representative of his time. And it may be said that he has enlarged the domain of history by admitting into it the history of religions. Before him the history of religion was the private reserve of the theologians, whether rationalistic or orthodox. He first took it up in a purely secular spirit, and made it the property of the public. The Church was not wrong in thinking him her worst enemy. To give the history of religion a place in the general history of the human mind was to strike a blow at the ideas of revelation and the supernatural which no mere tenderness of sentiment could heal or soften. On the other hand, he stimulated curiosity with regard to religious questions; and if the orthodox accuse him of profaning holy things, we may at least accord him the merit of having vindicated the necessity of the science of religion to the understanding of human history, and awakened in many minds a new taste for religious subjects.

"If Renan was not a creator in the domain of learning, neither was he an innovator in the domain of philosophy. His theological studies, while they developed in him the qual-

ities of the critic and the savant, tended to disgust him with metaphysical systems. He was too much a historian to see in these systems anything but the dreams of human ignorance amid an assemblage of things it could not understand, the successive mirages thrown up before the mind by the changing spectacle of the world. But if he was not a philosopher, he was a great thinker. He flung broadcast on every subject he touched—on art or politics, as on science or religion—the most original and the most pregnant ideas. Thus, as a thinker as well as an historian, Renan was the faithful interpreter of the time in which he lived. Our era has lost faith, and admits no source of certainty but science; but it has not been able to make up its mind, as the Positivists would have it, to turn the conversation and talk no more about what it does not understand. It cannot help throwing its sounding-line into the bottomless deep of the unknowable, producing into the infinite the lines of hypothesis suggested by the sciences, and lifting itself on the wings of dreams into the world of mystery. It feels that without the faith—or the hope—of invisible realities, life loses its nobleness; and it feels, for the old heroes and mystics of the religious life, an attraction and a tenderness made up of vain regrets and formless aspirations. Of this state of mind Renan was the supreme representative; and he himself contributed to create it. No one ever affirmed more blankly, more unflinchingly, the sovereign claims of science as the only source of positive certainty, and the necessity of finding in it a sufficient basis for life; no one ever more resolutely excluded the supernatural from history. But at the same time he piously gathered up the tears and sighs of humanity, panting for a super-terrene destiny; he restored to life in his own soul the souls of the founders of religions, the saints and mystics; he set before others, and before himself, all the hypothesis which science still permits to the religious soul. Curiously enough, it is three Bretons—three sons of that serious, inquiring, and yet mystical Celtic race—who have been in France the representatives of the whole philosophic and religious movement of the century—Chateaubriand representing the poetic and imaginative Catholic revival; Lamennais, first the reconstruction of dogma, and then the revolt of reason and the heart against a Church which closed itself against the ideas of liberty and democracy; and Renan, the positivism of science, combined with a sentiment of regret for

the lost faith of humanity and a vague yearning after something to take its place.

"As to his skepticism and his so-called dilettantism, they were but the consequence of his sincerity. Afraid, above all things, of deceiving or being deceived, he had no fear of proposing contradictory hypotheses on subjects where he believed certainty to be impossible. People have wondered that the same man who wished to have the words *Veritatem dilexi* placed upon his tomb should so often have asked with Pilate, 'What is truth?' But these questions, not unmingled with irony, were themselves a homage to the truth. He perceived that for most men the love of the truth means intolerance, fanaticism, particular opinions received by tradition or born of the imagination, always destitute of proof and destructive of freedom of thought. To assert opinions which he could not prove seemed to him an insufferable impertinence, an infringement of intellectual liberty, a want of sincerity toward himself and others. And he bore himself this testimony: That he had never consciously uttered a lie. He regarded it as Stoicism, not skepticism, to go on in the practice of duty without knowing whether it had any objective reality; to live for the ideal without believing in a personal God or in any future life; and in this twilight of uncertainty where man lives, here and now, to create, by the fellowship of pure and noble minds, a celestial city where virtue is the more divine because it expects and asks no recompense.

"There are some who think themselves disciples of Renan because they can imitate the ripple and the sparkle of his style, his tone of irony, his attitude of doubt. They have not given themselves the trouble to imitate his virtues, his colossal labors, his consummate devotion to truth. They have not found out that his skepticism was a compound of gentleness, modesty, and sincerity. Those who read his *Future of Science*, written at the age of twenty-five, and who see the intimate connection it holds with the whole mass of his life's work, will add their testimony to his own: *Veritatem dilexit*.

"And now, if we are to ask what is the special characteristic by which Renan must take rank among the great writers and great thinkers of the world, we shall find that his supremacy resides in his peculiar gift of seeing nature and history in their definite variety. He has been compared to Voltaire, because Voltaire, like him, was the mouthpiece of a century; but Vol-

taire lacked his learning, his real originality of thought, his charm of expression. He has been compared to Goethe; but Goethe was above all things a creative artist; and, besides, Goethe's intellectual horizon, vast as it was, could not have the extension of Renan's. Never has there been a more comprehensive, a more universal mind. China, India, classic antiquity, the Middle Ages, modern times, with the infinite perspective of the future—all the religions, all the philosophies, all civilization—he knew and understood it all. He recreated the universe in his own brain; he thought it out again, so to speak; and that in a variety of versions.

"The spectacle that he thus inwardly conceived and contemplated it was given him to communicate to others by a sort of enchantment of persuasive speech. This power of creative contemplation was the main source of the continual gladness which illumined his life, and of the serenity with which he accepted the approach of death."

Democracy and our old universities

JOSEPH KING IN THE "CONTEMPORARY REVIEW"

"There are several tendencies in the present day which lead one to suppose that before long the position and privileges of our old universities will have to come once again under searching review, and will probably have to submit to a stringent revision. Three of these tendencies are sufficiently marked and important to be briefly denoted, though perhaps, as they are all the outcome of the modern democratic spirit, they need hardly be strongly differentiated. The first of them is the education movement, of which the board schools, university extension classes, technical education, the demand for secondary and intermediate education, and the public free libraries are the various signs; this tendency means that men recognize more and more the value of education, and intend to bring education more within the means and reach of all. Another tendency is that which may be called the revolt against privilege, and which claims that the public services shall be open to all, and not kept, as they have long been, and still are to a too large extent, as the preserves of the nobility and wealthy classes; many posts are practically only open to those who can pay for the education which they presuppose, or can afford to wait for the opportunity when it arises.

Democracy will not be content till the line of stepping-stones leads clear, without any gaps, from the board school to the Horse Guards, Trinity House, and the Privy Council. The third tendency, which makes in the same direction, is that which gives force and cogency to the word 'disestablishment.' It is not that the Church of England is not growing in energy and genuine philanthropy every year; it is not that Dissenters envy the rich endowments and the high political and social places belonging to the richest Church in Christendom; it is not even that the comparatively few disabilities under which nonconformists still labor excite great popular sympathy. But the feeling of the democracy is, and must increasingly continue to be, that the Church of England has an exclusive use of what is national property, is a great cause of dissension in religion by its refusal to co-operate with other religious bodies, always sides with the party that is thwarting democracy, and is in a word incompatible with democratic progress.

" . . . It must never be forgotten, in discussing the past and present of Oxford or Cambridge, that the university and most of its colleges were originally ecclesiastical institutions, dating from the time when there was complete communion and accord between the Church of England and the Papacy. The colleges were originally, like the old hospitals, eleemosynary establishments, and like the monasteries, under a common rule of life, and intended primarily for religious purposes. From the original statutes of the colleges, moreover, it is abundantly clear that they were in many cases founded *ad studendum—i. e.*, with the idea that the inmates should devote themselves to study, not to teaching. Their founders desired their inmates to acquire more learning themselves, but did not require them to impart more learning to others. After the Reformation, the compromise between Catholicism and Protestantism, which is the basis of the Book of Common Prayer and the Church of England, was fully reflected in the university and its colleges. The old statutes were retained and professedly respected, but practices which those statutes enjoined were disregarded. The universities remained, indeed, the nursery of the clergy and the headquarters of ecclesiastical learning, but as the Anglican Church now professes to be both Catholic and Protestant, and is really neither, but only Anglican, so the universities then professed to be national and religious, but were neither, and only academic.

" . . . Let us look at the present position of the University of Oxford. This can be done by considering the audited and published accounts of the university and the colleges. By this course we can review the way in which, and the cost at which, the university does its work.

"The gross income of the University (apart from the colleges) is about £65,000 per annum; the expenditure of this income includes the following sums: £9868 on professors, £2389 on readers, £4775 on examiners, assessors, and invigilators, £1165 on the university police, £5449 on interest and sinking fund on loans, £1130 on printing, £18,947 on institutions and public buildings. These items cover a large part, though not the whole, of the internal expenditure of the university. A further examination of them, in no great detail, will show how the university is worked.

"Nearly £10,000 for about fifty professors does not seem extravagant, averaging only £200 each. But it must not be forgotten first, that some professors do not even reside in Oxford, many more do little teaching or lecturing, while most are fellows of some college, or have some other position in the university, which means an increase, small or large, in their emoluments—*e. g.*, out of the chapter fund of Christ Church (£15,000 per annum) five theological professors receive very large stipends, which do not appear at all in the university accounts.

"The £2389 which is païd for the services of about fourteen readers is an amount which cannot be grudged. Some of the readers are really doing professors' work, and some of them are men whose scholarship, research, and ability have given them the widest reputation. The late Dr. Hatch, for instance, never held a professorship of any kind in the university, but only a readership; yet I found, when visiting the universities of Germany some years ago, that he was the only Oxford theologian who had at that time a European reputation.

"Concerning the £475 to examiners and others it may be noted that the examination fees charged amount in the same year to £5621, so that the university makes a substantial profit on its examinations. As to the £1165 for the university police, those acquainted with the university will wonder how so large an amount is spent presumably on the 'bull dogs' who attend the proctors in their nocturnal perambulations, while those unfamiliar with university life will wonder why the uni-

versity needs police at all. The amount paid as interest and sinking fund loans—viz., £5449—is not at all to be complained of, considering the magnificent buildings which Oxford has seen erected in recent years as new examination schools and as laboratories and museum. The sum of £1130 for printing will appear rather extravagant, even when account is taken of the numerous notices, list of examinations, etc., which are posted up in every college, and most of which no one reads.

"The enormous item of £18,947 for institutions and public buildings includes some of the best work of the university, for under this heading appear the museum, the scientific departments and laboratories, the university galleries, the parks, the botanic garden, and many other buildings—in fact, all the great institutions and departments which make Oxford probably the most magnificently appointed university which the world has ever seen. But though no one can grudge the institutions of the university being well maintained, yet there can appear little doubt, even to anyone who looks through the published accounts, and none at all to anyone who knows these institutions personally, that an enormous amount is spent in maintenance, and very little indeed in making the collections more perfect, or the institutions more effectively and widely useful. This might be illustrated by reference to nearly every institution in the list; I shall, however, only refer to one, but that shall be the greatest and most important of all—viz., the Bodleian Library.

"The Bodleian Library is in many ways unique, and its peculiar attractions are known to all scholars. The expenditure upon it for 1890 was nearly £8000. Of this sum not quite £2000, about one-quarter only, went in purchases of books and manuscripts. This sum is perfectly inadequate to keep the great library up to the standard which it should maintain; it may be urged that, besides the Bodleian Library, each college has its library; nevertheless, considering the very small amount expended on those college libraries, the very small use of which most of them are, and the way in which the various colleges have neglected the arrangement made some years back, by which they undertook to develop their several libraries in certain particular or specialist directions, the Bodleian Library ought to be maintained by far better and larger purchases than at present. It received, of course, about ten thousand volumes, all the published books of Great

Britain, every year, without payment, under the Copyright Acts; but to the British Museum Library are added annually about thirty-five thousand volumes, in addition to the ten thousand which it received under the Copyright Acts, and, taking this number as some approximation to the number of new foreign books, from which an academical library has to choose, it may be safely inferred that the Bodleian Library does not pretend to keep itself supplied with the chief works of academic interest published on the Continent or elsewhere. But indeed no such inference is necessary; for have not the best authorities and scholars of the university complained quite openly of the neglect and niggardliness pursued in reference to the Bodleian Library? The last event in the struggle against this reactionary and obscurantist policy took place a very few months ago, when Professor Max Müller, the most learned and widely famous man now in Oxford, was defeated, when he was a candidate for the post of curator of the Bodleian Library, by a clergyman who owed his position in his college and in the university to a personal privilege, and who was pushed forward as a champion of the reactionary and clerical obscurantism which still reigns so powerfully in Oxford.

"The impression that the great wealth of Oxford produces far less in actual results than ought to be expected is confirmed when one passes from an examination of the university finances to those of the colleges.

" . . . Can this administration of the university and its collges, pleasant though it be in so many respects, be expected to remain unchanged in the face of the rising democratic spirit of the age?

"It will be urged by the defenders of the *status quo*, who plead so pathetically—and illogically—for allowing our dear old universities to remain what their pious founders intended them to be, that much of this extravagant expenditure on other than educational purposes is due to a laudable desire to follow old tradition and usage, and to realize the idea that these colleges are the training-homes of England's gentry and the Alma Mater of England's bishops and clergy; as such the colleges must be kept up as the homes of gentlemen, not with the severe economy of an industrial school. The answer to this is short: so long as this view prevails to such an extent as it prevails to-day in the common rooms of Oxford, just so

long will the universities be out of touch with the democratic spirit of the age.

"There is another argument upon which the privileges of the colleges, and from the privileges the extravagant expenditure is of course inseparable, are defended; it is that so long as the statutes of the colleges are observed, and the objects for which the colleges were founded are respected, the state and the public have no right either to complain or to interfere. How utterly inapplicable such an argument is may be shown by taking the single instance of All Souls College; by their original statutes the fellows of this college were to be 'poor and indigent,' were to attend chapel five times on Sundays, and every Friday and Saturday throughout the year to chant the Burial Services and the Requiem for the Dead, etc.! That the Catholic and religious services enjoined are now optional may be passed over, but the intention of the founder that the college should be for the poor and indigent ought not to have been so lightly disregarded. How it is now observed may be judged from the fact that out of about 130 names on the books of All Souls about thirty, or nearly one-quarter, are names of titled persons! Can anyone plead for allowing this college to go unreformed on the ground of respect to the pious founder's intentions?

"Surely these facts are enough to found a basis for the contention that if democracy is to become the dominant spirit of our constitution, of our government, and our social life, the old universities will have to submit to sweeping changes, and will have to accept remodeling on democratic lines. What those lines ought exactly to be is another question; the plea put forward in this article is simply for democratizing the old universities. But in conclusion it may be permitted to point out, tentatively, several ways in which the change might be wrought; a few such suggestions will go a long way toward showing that to make the old universities more democratic will neither make their life less beautiful nor depose them from their position as the training-homes of our leading citizens.

"The two University Commissions of 1850 and 1877, and the legislation in connection with them, which have so altered the universities for good during the last forty years, might be followed either by a standing University Commission, or by the establishment of an Education Office, under a Minister of

Education; the University Commission or the Education Office should be as progressive in its policy as the Education Department is now in dealing with elementary education; and a similar, though less rigid, superintendence of the educational work of the universities and colleges should be exercised by the Education Office or the University Commission, like that now exercised by the Education Department over the work of our primary schools. Many ways in which this might be done without destroying the independence or individuality of the universities or colleges will suggest themselves—*e. g.*, the expenditure on purposes external to education might be limited, the prize fellowships might be coupled with a condition that certain work be done or certain results shown by the holders, the emoluments of heads of colleges, professors, and tutors might be reviewed with the object of seeing that those who really do the work get the pay, and not those who do not do it.

"The three great advances along the path of democracy which the old universities have taken during the last forty years are the admission of unattached or non-collegiate students, the abolition of religious tests, and the university extension movement. Each of these advances must be followed up further. Students must be admitted to, and allowed to study at, the universities whenever they show that they are serious in their desire for knowledge, and they must be allowed to graduate even though they have not acquired that rudimentary knowledge of Greek which is sufficient to pass them through 'Little-go' or 'Mods,' but quite insufficient to enable them to appreciate the masterpieces of Greek literature in the original. The principle of unsectarian teaching must be carried further by allowing the theological professorships to be held by men of any creed, and theological degrees to be obtained by any students who are worthy of them, even although they are not clergymen of the Anglican Church. The university extension movement must be recognized as an integral part of the university work, and the university must not only contribute men and funds to this purpose much more liberally than heretofore, but some method must be found to make the university extension student in a real measure a member of the university; or, at least, certificates must be given to university extension students, which will represent an actual value in seeking appointments in the Civil

Service, under local authorities, and in elementary schools. It need hardly be added that a true democracy will admit women equally with men to the advantages of university life and culture.

"There are many other directions in which an intelligent democracy may be expected to remodel our universities. It will insist on the universities affording as much the stepping-stones to a mercantile career, to the engineer's office, to the life of an agriculturist or a scientific man, as it does at present to the Church, the Bar, or the schoolmaster's profession. It must be the home, not only of classical learning and academic studies, but of practical and technical teaching. The French schools of agriculture and the German schools of forestry are institutions the like of which might be grafted on to our university life. Yet, again, the old universities must be brought more into line with the other universities. Any member of the Universities of Durham or Cambridge, may be incorporated into the University of Oxford, but the members of London or Victoria Universities, however brilliant their attainments or degrees, have no such privileges. An institution like Lampeter College, again, finds favors in the eyes of Oxford University which are not extended to Owens College or our great colonial universities.

"On such lines and with such changes the old universities of Oxford and Cambridge might pass from being—what they once were entirely, and are still far too much—the English gentleman's universities, and become the British citizen's universities. With wide tolerance for all creeds and all branches of learning, with generous encouragement for all noble sciences and arts, with a place for the poor student as well as the peer's son, with the aim of sending out men to work and to lead in all departments of our natioanl life, the old universities would add a new luster to their great traditions, would make their enormous wealth vastly more useful, and their undoubted influence for good more powerful and more pure."

VII

DISCUSSIONS

INTERNATIONAL CONGRESS OF PHILOSOPHY

As is well known, it is proposed to hold, in connection with the World's Fair at Chicago, a series of congresses for the discussion of questions in art, science, philosophy, and philanthropy. Arrangements are actively in progress looking to the successful management of these congresses, and the support and co-operation of the men and women eminent in their respective branches have been cheerfully promised.

Each congress is to have a local committee of arrangements. This committee will constitute the means of communication and action between the persons and organizations that will participate in a given congress. This committee of arrangements consists of a comparatively small number of persons who, with few exceptions, reside in or near Chicago. This committee has adjoined to it, and constituting its non-resident, but active branch, an advisory council, composed of persons of distinction in the work involved, and selected from many parts of the world.

The Local Committtee of the Philosophical Congress is now engaged in forming its advisory council, the members of which are to aid largely in the making of the programme and the selection of speakers. Among the members of the advisory council are Dr. William T. Harris, Professor George H. Howison, Professor Nicholas Murray Butler, Professor Joseph Le Conte, Mr. George P. Brown, Professor Josiah Royce, and others of equal eminence. Some of the above named have promised to prepare papers for the congress. Steps will also be taken at the congress toward the formation of a permanent National Philosophical Society.

The Congress of Philosophy will take place during the week commencing August 21, 1893. It will meet in the permanent Memorial Art Palace, erected on the Lake Front Park, through the co-operation of the Art institute of Chicago, the city of Chicago, and the directory of the World's Columbian exposition. In this building it will be possible to hold a

General Congress and various special congresses at the same time. It is proposed, in the contemplated meetings, to have the pressing problems of philosophy stated, to outline the results already obtained toward their solution, and to indicate the probable line of advance in the immediate future. The discourses to be delivered will be permanent additions, it is expected, to our philosophical literature, and their publication a real contribution to knowledge.

It is hoped that a large number of teachers will attend the Congress of Philosophy. While this invitation is extended to all who are interested in the subject, it is certain that many teachers will find it profitable to hear the questions of education presented in relation to those principles which are the motive forces underlying history, and the development of the race. The course which the individual mind must take in its development will be made clearer by seeing the course which all mind takes in the manifestation of its potentialities.

Those who are interested in the great subjects which have always enlisted the deepest thought of the time, are invited to this congress, and they are asked to spread this information concerning it as widely as they can. All who intend to be present at the Congress of Philosophy are requested to send their names and addresses at their earliest convenience to Dr. R. N. Foster, Chairman of the Committee of Arrangements of the Congress of Philosophy, World's Fair Congress Auxiliary, Chicago, Ill. Bulletins will be issued from time to time giving such information as may be necessary.

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AN ANTITHETICAL COMPARISON OF FRENCH AND AMERICAN SCHOOLS

M. Rodriguez, whose report on the condition of education in Cuba was noticed in the EDUCATIONAL REVIEW,[1] has issued an English translation of his comparative estimate of French and American schools published in the Havanese journal *El Pais*. Without caring to comment on the conclusions which his observations seem to him to establish, I offer a few of the salient points that he presents, as food for reflection:

The French school lives more in the field of abstractions,

[1] III: 287.

makes more frequent appeals to the ideal, amplifies in the region of theories. In pedagogical doctrine, the French school seems to seek the center, the American school the circumference; the French school is satisfied to reach the end of the journey, the American school studies ways and means with deep interest. The Frenchman is remarkably idealistic, the American cultivates the sense of reality; the French schools are prone to overpraise method, the American schools put it into practice. The French are more individualistic, the American is frequently unmindful of individuals.

A review of the French school dilates over large spaces, but finds many waste tracts. In the American system, the nuclei are more numerous and in more immediate connection. The French schoolmaster feels himself strong on account of what he has learned from books. The American grounds his hope of success on his personal resources. The French educator prides himself on delivering a good lecture or deciding some doubtful point in classical scholarship. The American measures his scientific capital by the resources he has been able to draw from his own experience. The Frenchman trusts more confidently to the works of others; the American prefers to suggest. The French schoolmaster, assuming the task already ended, is content with having it repeated. The American, in every particular case, thinks that the educational task must be done anew.

In France, intelligence occupies the first rank; in America, will and character. Consequently, moral education is more vigorous and consistent in the latter country. The French schoolmaster cares little whence or how his pupil comes to school. The American teacher, if truly conscious of his task, relies on the co-operation of other public and social influences. In France the pupil is passive. The American child is taught slowly to unfold its own powers. In France, though book-making is flourishing, journalism languishes. In America, education owes to the periodical press the most efficient aid and impulse. In the American school the common language of daily life is freely used. In France, the teacher's language is technical and doctrinaire. The American text-book, grounded in experience, starts from the known and particular. The French text-book starts from the general and the absolute. The French text-book puts forward the rule as a previously settled conclusion. The American text-book prepares

the way, leading the pupil to deduce the rule from premises duly propounded. The authority of precept is urged upon the intellect of French pupils. In the American schools, authority is subordinated to the pupil's mental activity. In France the text-book accepts no partnership. In America, the pupil has his own word to say and collaborates with the teacher.

The inspection of public schools in France is restrictive and inquisitorial. It specially aims to exact the observance of the statutes. American inspection cares more particularly for technical efficiency. The French inspector is not always able to do the work of his subordinates. In America, progressive movements and reforms are almost always suggested by inspectors. The French system attends chiefly to the higher grades of instruction; the American school to popular education. In France, the great central institutions are unfavorable to individual action. Americans estimate efficiency in direct proportion to number of pupils. The French system tends to individualism. The American system is essentially collective.

In France, private institutions attain success more easily. In America, the common school underlies all public services. In France, the school is valued as a means. In America, education has more the character of finality. The Frenchman thinks that the power of ideas is in itself sufficient for the regeneration of mankind. The French school, with greater pretension to intellectuality, is confident that its course of study is adequate to insure morality and to mold character. The American school fits the young man for action by means of action. The American teacher has swept away many an unsubstantial and chimerical nonentity. The French teacher lingers far behind in this labor of expurgation. American schools ask woman's help in their work. If that help has any value in the French schools, the value is in proportion to the scant emancipation of woman. For this reason, while in America school training is somewhat akin to family education, in France the mother is kept out of sight. And what is the teacher? In America, a social institution; in France a functionary in the public administration.

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VIII

REVIEWS

University of the State of New York: 104th annual report of the Regents. Albany: James B. Lyon, State Printer, 1892, 3 vols., pp. 2619.

This public document, transmitted to the legislature on January 30, 1890, was issued to the public only a few months ago, owing apparently to unavoidable delays in the printing office. It demands attention not only because of its place in a long series of valuable educational reports, but because it is much larger, far more complete, and infinitely more painstaking than its predecessors. The division into volumes is wise and convenient, and the classification the obvious one. Into the first volume are put the report of the secretary, Mr. Melvil Dewey, and the various Bulletins issued during the year preceding the date of the report. The most valuable of these are the "summary of legislation in 1890 pertaining to higher education, or to the University of the State of New York, or any of its departments or institutions," and the detailed account of the twenty-eighth university convocation. The former is especially suggestive because it includes a record of all bills which failed to become laws as well as those which met with both legislative and executive approval.

The second volume is devoted to the colleges of New York State, and contains elaborate educational and statistical statements. The third volume is given over to the academies, high schools, and academic departments under the supervision of the Regents.

Of the report as a whole, it may at once be said that in scope, arrangement, and minuteness of detail it is to be ranked with the best educational reports issued by European nations. It contains the answer to almost any conceivable question concerning any institution for higher education in New York. Its statistics, despite all that the secretary says on pp. 40–51, are probably as accurate as those usually found in other reports of the same size, where the intelligent and honest co-operation of so large a number of persons must be depended upon. It

is very wise to publish these elaborate statistical tables every five or ten years only. It would a great gain if the Bureau of Education at Washington would pursue the same policy, which has also commended itself to the educational administrations of France and Prussia. By publishing elaborate tables of statistics at such an interval as this, there is ample time to make them accurate and complete, and also to base intelligent generalizations upon them.

The present report is entirely lacking in summaries, generalizations, or reflections upon the facts and figures presented. This is an obvious and serious defect and should be remedied hereafter. To know what figures mean, what lessons they teach, is even more important than to know figures themselves. It is true that the secretary hints, on p. r 51, at a reason for this omission, and the charts and comparative tables that are promised hereafter will be awaited with interest.

Some faults of arrangement in volume ii should be pointed out. New York State is fortunate in having within its borders a few universities, one or two of which maintain professional schools of as high a grade as any in the country. It also has a number of independent, or unattached, schools of law, medicine, and engineering. With the purpose, apparently, of putting under one head all of the places in the State where law, for example, may be studied, the Regents tear the university schools of law and medicine from their proper place and lump them with the independent, and usually irresponsible, schools of law. It is hardly necessary to point out that such an arrangement as this is not only artificial, but that it sacrifices the greater interest to the less. It is a grand thing to have a university—Columbia or Cornell, for instance—strong enough and brave enough to maintain high grade schools of law, and the university should be treated as a whole, reference to its professional faculties being made by a note attached to the enumeration of independent professional schools. In the present arrangement, for instance, Columbia College, which is a single institution, with one board of trustees and one financial administration, is treated as made up of a series of independent units. Its "schools" are really only administrative organizations and have no corporate existence at all. The arrangement becomes ridiculous when the Columbia College School of Political Science—an administrative organization—is dragged off and put next to the Chautauqua College of

Liberal Arts under the heading "Special." The dismemberment of Cornell University is carried out in the same way.

Matters like this are vital in elaborate official reports that go all over the world and are used by students of educational systems. In this respect, at least, the report before me is susceptible of great improvement.

N. M. B.

The Moral Instruction of Children.—By FELIX ADLER. New York: D. Appleton & Co., 1892, pp. xiii, 270. Price, $1.50.

This volume of Mr. Adler's is an interesting, elaborate, and unconvincing attempt to "dodge" an educational question of the first importance. It is to be regretted that Dr. Harris did not prepare for it a more extended preface, as he would certainly have thrown some light, that the book itself does not, on the religious element in education.

The definite instruction to teachers which Mr. Adler offers in chapters 6–17 is very clear and stimulating. He is a master of the art of putting things, and no reader can fail to grasp the meaning and application of his exposition, along well-known German lines, of how moral instruction may be imparted to pupils in the elementary schools.

The opening chapter, however, is the one that raises more questions than it answers. The possibility of unsectarian moral instruction which is neither irreligious nor anti-religious, will be cheerfully granted by all save extremists. The further facts that such unsectarian moral instruction is useful, that it can and should be given in the schools, and that Mr. Adler has suggested very excellent methods for so doing, may all be granted. But what about the religious element in human nature, in education? Millions of men, many of them American citizens and tax-payers, conscientiously believe that their religious faith and that of their children is of supreme importance. They feel that it includes and transcends morality. They believe that, as human nature itself cannot be dissected, so man's religious faith cannot be separated from his intellectual development. What shall the public schools do for this large class of citizens? Can they be ignored, despite all our fine sayings about liberty of conscience, individual freedom, equality before the law, and so on? Mr. Adler does not answer "yes," nor does he say "no"; he asks and answers another set of questions. He asserts with renewed emphasis

that unsectarian moral instruction is possible and should be given in schools. But no amount of iteration on this point—which is incontestable—and no amount of skill in presenting it, will render unnecessary an answer to the entirely different question, how do you propose to deal with the religious element in education?

It may as well be admitted that this question of religion in public education is of the first importance. In England the voluntary, or sectarian, schools are contesting every inch of ground with the board, or public, schools. In France sectarian schools are growing more rapidly than those supported by public taxation. In Prussia the question nearly provoked a political crisis a year ago. In at least a third of the States in this country the issue between sectarianism and public schools from which all religious teaching is excluded, has been more or less formally joined. The reply that is constantly heard is, "No union of Church and state"; but this is empty verbiage. It settles nothing. In a country where every man is free to hold such convictions as he chooses, and is also a citizen, how is a separation of Church and state, or, to put it differently, of the same man's religious and non-religious opinions, possible? It is obviously impossible. The two are inextricably intertwined. This is the real difficulty in adjusting the public treatment of religious questions in a democracy. This is why Archbishop Ireland's suggestions on the subject, whether final or not, are timely and should be candidly considered. Mr. Adler's objections to certain attempted solutions of the difficulty (pp. 5–11) are well enough, perhaps, so far as they go, but they do not dispose of all possible solutions. Indeed they do not reach the heart of the problem at all, but fall back on the "separation of Church and state" formula.

Mr. Adler's book will be widely read by teachers, as it deserves to be; but it should not be mistaken for a contribution to the question of religion in public education, although the author evidently intends it as such.

N. M. B.

America; Its Geographical History, 1492-1892. Six lectures delivered to graduate students of the Johns Hopkins university—By WALTER B. SCAIFE, Ph. D. Baltimore: The Johns Hopkins Press, 1892, pp. 176. Price, $1.50.

Columbus and His Discovery of America.—By HERBERT B. ADAMS, Ph. D., and HENRY WOOD, Ph. D., Professors in the Johns Hopkins university. (Being Nos. X, XI in the tenth series of Johns Hopkins university studies in historical and political science.) Baltimore: The Johns Hopkins Press, 1892, pp. 88. Price, 50 cents.

President Gilman might almost inscribe *Nihil humani a me alienum puto* over the doors of the Johns Hopkins University, so unerring is the instinct of that remarkable institution in seizing and presenting the scientific side or phase of any great human interest. The present celebration of the four hundredth anniversary of the discovery of America has stimulated to a remarkable degree the study of American history and geography among the public at large. Orators on the platform, preachers in the pulpit, editors in the great journals, essayists and historians in the magazines and in books, have marshaled their knowledge and interpreted anew the lessons of the Western world and its development. In these two publications the Johns Hopkins University makes its contribution, but it is, in large part at least, to the scientific side of the subject. Dr. Scaife's admirable lectures on America's geographical history are earnestly commended to the attention of all teachers who have to deal, even remotely, with American history or geography. They abound in interesting and novel information, well told, and cannot fail to throw a flood of light on the methods of presenting geographical material of this sort to young pupils.

The address by Dr. Adams is on a high plane and is decidedly interesting, as is the briefer paper by Dr. Wood. In an appendix is put a note on the bibliography of the discovery of America.

N. M. B.

Philosophische Propadeutik: unter Mitwirkung von Dr. Alexius Meinong, k. k. Professor der Philosophie an der Universitat in Graz. I. Theil: Logik. von A. Höfler, Professor am Gymnasium der k. k. Theresianischen Akademie in Wien. Leipzig: Freytag, 1890, pp. xiv, 244.

This logic deserves notice in an educational magazine, because its purpose is so distinctly an educational one. Höfler has already written an essay *Zur Propädeutikfrage* and Meinong published a book in 1885, *Ueber philosophische Wissenschaft und ihre Propädeutik.* More than in the case

of most text-books, the method of presentation demands and deserves criticism. The idea of the authors is suggested in words quoted from Bonitz (p. vii): "a discussion and working over of the subject with the students, a treatment of their objections and doubts, which are to be expressly awakened, when they do not appear of themselves." To limit as much as possible the amount of matter presented, to stimulate as wide and thorough a study of this as possible, is the author's aim. A short thesis is stated and then abundant and varied illustration, discussion, and criticism follow. The question how logic is to be taught is totally distinct from the question of method in writing a text-book on logic. For many teachers, examples and problems are more important in logic than in physics, as important as in algebra. A simple statement of definitions and results can rarely be made more valuable than a list of mathematical definitions and rules for the novice; indeed, it serves the same purpose as such a list, that of recalling what the student should know. Undoubtedly any subject takes more hold of the student when it is taught, as Bonitz long ago suggested, by making the student reach the results for himself. But if ever there is need of a teacher, a born teacher, it is in thus guiding the student's thought.

The attempt to write a text-book on this plan suggests the following objections: (1) it aims to do the teacher's work for him, and yet (2), without the guiding hand of the teacher, no single paragraph leaves a sufficiently definite, unified impression on the pupil's mind. Few men can use another man's work when it aims to map out their course in such detail, and the effort to do so ends in perfunctory and mechanical work. The plan needs life, and it is all but impossible to infuse life into a plan which is so elaborated on paper. (3) Granted that single paragraphs gave a definite result, in form to use, this is not true of longer sections. Take the section on judgment. Among the paragraphs are left a good many interrogation points which must remain so; and after reading the whole section, unless the mind has supplied a unification that is lacking, one has no definite idea of what result he has reached. The isolated reader and unskilled teacher have but a maze of criticisms and answers, the logical relation of the parts is not developed. But it is rather a thankless task to criticise a method which is so admirably carried out. No student can

really study this book without doing more thinking about logic than many who have written text-books on the subject. No teacher can read it without getting new stimulus, and finding many suggestions by which he can help his pupils to appropriate and think for themselves the truths he would teach.

The question as to what constitutes logic is now fully reopened, after having been regarded as settled for nearly twenty centuries. That it deals with thinking—correct thinking—is generally admitted, but here agreement ends. And yet the reason why logic is taught in our colleges is plain enough. Hegelian logic aside, the purpose is to call the student's careful attention to thinking, to the method of reaching truth. Botany may be taught to increase the sum of the student's ready knowledge; it may better be taught to call the student's attention to plants, their structure and growth, and to make him think about them. With reference to this *pedagogical* end, logic is a well-defined subject. It examines thought as a psychological process, analyzes it into its elements, and the connections of these elements; finally, it carefully studies methods of investigation as well as of abstract thought. Judged by this standard, mathematical logic, which deals with the number of positings and negations which may be made in reference to a given set of terms, has comparatively a minor interest. Judged by this standard, logic is closely connected with rhetoric, and even with grammar; for rhetoric and grammar may be taught with this same end, that of teaching the student to think accurately and correctly.

This book of Höfler's takes a well-defined position in line with what I have just said. After a brief psychological introduction, the *Elementarlehre* discusses the concept, the judgment, inference, and proof, and the *Methodenlehre* outlines the theory of scientific research. Each section of the *Elementarlehre* begins with the psychological side of the subject, and this is made the basis for its logical treatment. Beginning with the section on the concept, the psychological basis is evident in the omission of the word *term*—concepts are the units for logic, not terms—in the omission of negative terms or concepts, and in the definition of *abstract*, as applying to the concept which has no representative image. Judgment, too, is a psychological process, a process totally distinct from that of thinking concepts. It is analyzed as the instrument of stating truth, and then the evidence for this truth is discussed.

I have passed by some slight inconsistencies, but the theory of the syllogism seems to start from a wholly new standpoint. No mention is made of the psychological process, but instead we have a section on the law of sufficient reason. The basis seems to be shifted from psychology to the theory of knowledge. In a sense this is only apparent, for the syllogism is treated under the general heading of judgment; but certainly a word as to the psychological process would have left the subject clearer. This section is Aristotelian in its matter, and excepting the short section on *inference from a single premise*, it is admirably presented. The careful attention to proof of the syllogism and its rules, is certainly to be commended. The difficulty of the subject is seen in the recurrence to rules and methods which belong to a sort of symbolic logic—even the negative term is used with freedom.

There is a prejudice against the study of more than the barest *Elementarlehre* in the Austrian gymnasium, so that the section on the theory of scientific research is very brief. To accomplish this Höfler has treated the concepts of *cause*, *power*, *faculty*, etc., under the topic *concept;* judgments expressing cause under *judgment;* and the whole theory of induction is given under the heading *probable inference*. These topics having been disposed of, the *Methodenlehre* is brief enough. It has the same excellence of wide illustration and criticism, the same faults of failure to sum up clearly the results reached, that the rest of the book has shown.

In conclusion, the book has hardly reached its own ideal, but it treats logic successfully from the pedagogical standpoint, when more pretentious books have failed to define a distinct science.

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Word-Building.—By BRAINERD KELLOGG, LL. D., and ALONZO REED, A. M. New York: Effingham Maynard & Co., 1892, pp. 122.

This little book contains fifty lessons, combining Latin, Greek, and Anglo-Saxon roots, prefixes, and suffixes into about fifty-five hundred common derivative words in English, with a brief history of the English language. A work of this kind cannot contain anything new except matters of arrangement and method. The arrangement adopted here is the alphabetical, as far as the roots are concerned. The method is the synthetic; that is, the pupil is required to build up words

from a given root by the addition of prefixes and suffixes. Experience seems to show, however, that the study of the formation of words in this way is excessively wearisome to the pupils, even though great stress be laid, as it is here, on tracing the derived or metaphorical meanings of words from the original meanings of the roots. Indeed, it is very doubtful whether the average mind is capable of retaining the vast mass of information presented within so small a compass. The trend of opinion among educators seems to be that the study of the formation of words is better taken up in connection with the critical study of literature. The analysis of the word "indentation," for example, is a much more agreeable exercise when done with the express object of getting at its meaning in a particular context, than when it is studied as a separate thing. And whatever increases the pleasure of an exercise, increases its usefulness.

Excellent as it is of its kind, *Word-building* does not easily lend itself to what may be called the incidental method of studying word-formation in connection with literature, as the derivative and compound words are not given in alphabetical order, and hence are difficult of access. To those teachers who still prefer the study of isolated words, the method and arrangement will appear altogether admirable.

W. H. M.

Essays and Notes on Shakspere.—By JOHN W. HALES, M. A. New edition. London and New York: Macmillan & Co., 1892, pp. x, 300.

Professor Hales's volume—of which this issue is a second edition—is made up of twenty-eight papers written for English periodicals between the years 1870 and 1880. Of these papers by far the larger number are "Notes" rather than "Essays," being short book reviews or bits of Shakspere discussion reprinted from the *Athenæum* or *Academy*. The book reviews contain little that would seem to justify their preservation in this permanent form. The other short papers are mostly concerned with matters of textual criticism, and, though of little interest to the general reader, contain considerable of real value to the Shakspere student. The paper on the Porter in *Macbeth*, for instance, is an excellent specimen of Professor Hales's careful scholarship and sound sense. Of the four or five longer papers, which may with more propriety be called essays, the most noteworthy are two con-

tributed to the *Quarterly Review*, some twenty years ago. One is an excellent piece of "æsthetic" criticism on *King Lear;* the other is an article on Chaucer and Shakspere. This last is the most valuable thing in the volume. The earlier pages, which are taken up by an estimate of Chaucer's literary work, bear evidence, by a certain didacticism of tone, to the fact that they were written almost a generation ago, when the average reader of reviews could not be expected to know his Chaucer so well as he does to-day; but the latter part of the essay contains much valuable matter, not only upon the relation of Shakspere to Chaucer, but upon the general reputation and influence of Chaucer in the sixteenth century. Indeed, up to a few months since, one might perhaps have pronounced the essay the best brief discussion of the subject accessible; it has now been superseded, of course, by the free discussion of Chaucer in literary history given in the third volume of Professor Lounsbury's great work.

C. T. WINCHESTER

WESLEYAN UNIVERSITY

Longmans' Object Lessons.—By DAVID SALMON: Revised and adapted to American schools by John F. Woodhull, Professor of methods of teaching natural science in the New York College for the training of teachers. New York: Longmans, Green & Co., 1892, pp. 238.

Mineralogy.—By FREDERICK H. HATCH, Ph. D., F. G. S., of the Geological Survey of England and Wales. New York: Macmillan & Co., 1892, pp. 124.

Lessons in Zoology—By CLARIBEL GILMAN. Boston: New England Publishing Co., 1892, pp. 129.

A four years' course in science is here scheduled that embraces botany, zoölogy, chemistry, and physics. The four subjects are studied throughout the course, the lessons being graded to suit the stage of intellectual development of the child. The plan adopted is eminently objective and inductive. Thus, to gain the knowledge that a cat's tongue is rough, the child is to bring the cat into the schoolroom and allow it to lap milk from his hand; this is to lead to conversation concerning the usefulness of the rough tongue. To gain the idea of plasticity, the child tries to mold with dry plaster of Paris, then moistens it and repeats the molding experiment: by way of contrast he next tries to mold with moist sand, then with clay, putty, cold and warm gutta-percha, discovering by his own efforts the property of *being able to be molded* and classifying the objects accordingly. The next lesson is an

outgrowth of this one, the bricks molded from the clay furnishing the topic. So, throughout the book, new knowledge gained is made the stepping stone to something higher, coordinating not only the facts of any one science but also the various sciences themselves.

The process of comparing objects, in order to determine their similarities and differences as a basis of classification, is most admirably developed. Indeed, this is the most striking feature of the book. Manuals heretofore have, as a general rule, treated each object as if it were isolated from all else in the material world, and as if the facts concerning that particular object were of prime importance. This book subordinates the knowledge gained of particular objects to the use of objects as a means of exercising the powers of observation, comparison, and generalization.

The topics selected for lessons are in the main the ordinary everyday objects with which the child is environed. Where for the sake of its practical utility an exotic is selected, such as the coffee plant or sugar cane, pictures of the plant are to be used. This is to do away with the complaint of the teacher that needed objects cannot be obtained. Even in the cities a slight effort will procure the objects needed for these lessons.

The object of Mr. Hatch's book is evidently to present the leading facts of mineralogy in an interesting and readable form. The author has succeeded as well as one might fairly expect, since to popularize mineralogy is no easy task. For the observation of life which makes the study of animate nature so charming, there must be substituted in the study of minerals the consideration of definite form, fixed relation of sides and angles, and unchangeable chemical composition. A subject like mineralogy, therefore, which has little power to fascinate the young student, demands greater skill on the part of the teacher and book-maker.

While Mr. Hatch's work is not designed especially for a text-book, it has the qualities of clearness, conciseness, and interest requisite for a good text-book. It is divided into two parts. Part first treats of the qualities of minerals; part second, of the classification and description of minerals. As a practical aid to students, part first is superior to part second. The clearness with which the difficult but important subject of crystallography is presented is very valuable; so also chemi-

cal composition, specific gravity, hardness, cleavage, fracture, and phenomena relating to light are as lucidly presented as is possible, consistent with the extreme brevity of the book.

Part second is not sufficiently exhaustive to be of much importance to the practical mineralogist and is too technical for the amateur. It is indeed difficult to determine to what use the author intended to adapt this part, for it presupposes considerable knowledge of chemistry and the origin of the earth's crust, while it dips in a very shallow way into petrology. Its technicality is not consistent with the elementary character of the first part. It would have been better to have closed with the first part; this would have formed an excellent preparation for the use of any standard manual of mineralogy.

As a manual for teachers Gilman's *Lessons in Zoölogy* is rich in suggestion. Its lessons include typical forms of the animal kingdom below the vertebrata and above the protozoa. Each specimen selected is accurately examined as to structure and is illustrated by simple drawings such as the children can make from the real object.

Of the twenty-six objects upon which lessons are given, half can be obtained in the living state only at the sea-shore. This limits the maximum usefulness of the book to sea-shore districts, although the plan of study may be profitably applied to any available object. Again, there is a lack of interesting material relating to the life history and habits of animals. Many stumbling blocks in difficult points of structure are removed—and in this the book is very able—but the ideal manual must combine anatomy and scientific classification with the lighter and more fascinating aspects of zoölogy—such as provisions for defense, warfare, social habits, nest building, economic value of animals, etc.

So far as Miss Gilman's book goes, it is very helpful. It is a question, however, whether the lower forms of life, such as the hydra and the sea anemone, should, on account of their simplicity of structure, be selected as the point of beginning or whether the higher forms, whose structure needs no microscope and whose habits are so intensely fascinating, should not rather be selected as the means of developing in children that love for the subject which shall inspire them to continued and more exhaustive study as they grow older.

A. B. P.

IX

EDITORIAL

Jena is to follow the example of Chautauqua and Oxford, and in 1893 a holiday course in the modern languages will be held there. The object of the course is to provide opportunity for the acquirement of German (by English students) and of English (by German students) by means of associated study. It is not regarded as an adequate preparation for the modern language teacher, but as a supplementary aid for those who cannot find time or means for continued residence abroad. Formal lectures are to be followed by informal conferences and social intercourse between German and English teachers. A pedagogical turn will be given to the course by insisting at every opportunity on the study of the methods of modern language teaching. Jena is excellently situated for such a course as this, and it is probable that some American teachers will wish to take part in it. The committee having the matter in charge is made up of Mr. John J. Findlay, Professor Kluge, Dr. Noack, and Professor Rein.

The Barnard club of Providence, which has already done much to stimulate a serious and studious interest in education among the teachers of Rhode Island, is maintaining this winter a systematic course of lectures on pedagogical subjects. The lectures are scientific rather than popular, and deal with modern educational psychology, the principles of education, and fundamental questions of method. The work is regarded as an experiment, but is meeting with marked success and may be expected to grow into something more extensive and permanent.

The annual meeting of the College association of the Middle States and Maryland, held during the Thanksgiving recess at Swarthmore college, was well attended and interesting. The programme was respectable without being remarkable. The high schools and their relation to the colleges were much

talked about, and the wretched condition of the Pennsylvania high schools was exposed in a way that ought to force improvement from a sense of shame alone. The perennial subject of English teaching in colleges was well introduced by Professor Schelling and the veteran March, but the discussion that followed was disappointing. President Gilman and Dr. Trotter made their subject—geography as a scientific basis for the study of history and biology—both entertaining and practical, and aroused no little interest in it. President Low's address, which will be found in full elsewhere in this issue, was cordially received by a large audience.

The Association took an important step in changing its name and enlarging its membership so as to include representatives of the preparatory schools. It will hereafter be the Association of the colleges and preparatory schools in the Middle States and Maryland. A few colleges were disposed to resist this change, but the majority was against them. That this step was wisely taken there can be but little doubt. More than half of the topics ordinarily discussed at these meetings involve considerations that lead directly to the work of the secondary schools; their co-operation with the colleges is, at this time, one of the most desirable things in American education.

The Association will meet in 1893 at Columbia college, under the presidency of President Taylor of Vassar, and it is safe to predict an unusually large attendance. Preparatory schools in the Middle States and Maryland that wish to join the Association should send their applications without delay to the chairman of the executive committee, Professor Butler, at Columbia college.

Princeton college has announced during the month certain changes in its requirements for admission that demand more than a passing notice. In all, twenty-eight subjects are specified for examination; of these fourteen must be offered by every candidate. The remaining subjects are for those who wish to take advanced standing in the freshman class, but whether this advanced standing will lessen the period of residence required for the degree is not stated. The supplementary list of subjects includes Ovid, Sallust, additional work in Vergil and Xenophon, advanced French and German,

solid and spherical geometry, and plane and spherical trigonometry.

No subject in natural science is found in the list, and only the barest modicum of English. Of the twenty-eight subjects, eighteen are classical. Indeed, the whole scheme is a surprisingly bold challenge to the best educational tendencies of the time, and can only be described as reactionary. It cuts the college loose from the great public high schools and makes it depend entirely upon the private institutions that can afford to cater to a Princeton constituency. The principle of minimum and maximum requirements that is introduced is good but not new; Harvard has applied it for several years, and in a much better way, it must be said, than Princeton now proposes to do. In itself, the principle is a good one, but to omit natural science from the scope of its operation is folly.

With this single exception, the changes proposed are altogether bad. It is hard to believe that they would have been proposed if the Princeton faculty were represented more fully and frequently at the great educational meetings where these matters are studied and discussed. At a time when everyone else is trying to make college entrance examinations simpler, while putting them on a higher plane, Princeton proposes to make them more complex and says nothing about demanding a better preparation in the old subjects. At a time when everyone else is considering whether Attic Greek alone should not be read in the schools, Princeton adds to the Homeric dialect that of Herodotus, basing this surprising innovation on the curious argument that Homer wrote earlier than Herodotus and that the *Iliad* should not be used as a "parsing book." If the argument were sound, which it is not, it proves too much and makes against rather than for the Princeton proposal.

The effect of this new departure will be to add to the troubles of the fitting schools, and it is a positive step backward for the institution that makes it. It emphasizes again how hard it is to make any real progress in dealing with educational matters in this country, for each institution is at liberty to indulge its own crochets.

An important session of the Committee of arrangements for the international congresses of education was held at the

Drexel Institute, Philadelphia, on November 19. The plans suggested for the organization and administration of the congresses were discussed at length and in detail. The conclusions arrived at, which will be embodied in a circular to be issued by the Commissioner of Education, are these:

The congresses will be convened in the building to be provided for the purpose in Chicago, on Tuesday, July 25, 1893, and the three following days. A general session will be held on Tuesday evening and another on Friday evening. These will be presided over by President James B. Angell of the University of Michigan, as the representative of the institutions for free higher education in the United States. The fifteen special or departmental congresses will be assigned to the mornings of Wednesday the 26th, Thursday the 27th, and Friday the 28th of July. Afternoon sessions on the same days may be arranged for, if thought desirable.

These congresses, and the names of the presidents designated for them, are as follows: Kindergarten education, Mrs. James L. Hughes of Toronto; Elementary education, General John Eaton of Washington, D. C.; Secondary education, Headmaster James C. MacKenzie of Lawrenceville, N. J.; Higher education, President Daniel C. Gilman of Johns Hopkins university; School supervision, Superintendent Andrew S. Draper of Cleveland, O.; Technical education, President Francis A. Walker of the Massachusetts Institute of Technology; Industrial education, Dr. John D. Runkle of Brookline, Mass.; Art education, Director Halsey C. Ives of the Art School, Washington university, St. Louis, Mo.; Physical education, Dr. Edward M. Hartwell of Boston, Mass.; Normal school education, Dr. Edward A. Sheldon of Oswego, N. Y.; Business college education, Professor George Soulé of New Orleans; Rational psychology, Dr. James McCosh of Princeton, N. J.; Experimental psychology, President G. Stanley Hall of Clark university, Worcester, Mass.; Educational publications, Henry Barnard of Hartford, Conn.

Admission to these congresses will be by ticket, which will only be issued to those persons who register and pay the fee of $2 at the office of the treasurer of the National Educational Association. This office will be open just before and during the congresses, in the same building in which they are held. A ticket will entitle the person to whom it was issued, to

admission to any one, or to all, of the congresses, and also to the volume of proceedings when published.

Early in the spring the programmes will be agreed upon and made public. The success of the congresses seems to be assured, as many distinguished foreigners have already indicated their intention to be present and great interest is being taken in them by American teachers. They will add another to the long list of triumphs recorded by the National Educational Association.

Of the meetings of the Massachusetts State Teachers' Association in recent years, the one at Springfield on November 25 and 26 stands easily at the head. The attendance was not so large as it has frequently been; but the topics discussed were of a fundamental as well as a practical character, and they were handled with consummate ability. It is not possible in a brief notice to touch upon them all, though no one of them was without special interest. On the first afternoon of the session, the high school, grammar, and primary sections met in separate halls. At each of the general sessions and in the high school section, the emphasis was placed, where it most certainly belongs, upon the literary or humanitarian studies; and there was the keynote of the meeting. In no recent educational gathering has there appeared so much evidence that, at last, education is coming to be recognized as a process of human development for human happiness and human need.

Those familiar with educational associations for the last twenty years are struck with the changed attitude of the colleges toward the schools of the lower grades, and of the high schools toward the grammar and the primary schools. It is within the memory of the present attendants upon these conventions, that a college president who concerned himself about the discussion of primary education, and attended the meetings of primary and grammar school teachers, lost caste among his fellows. Twenty years ago the presidents of some of the younger colleges in the West did indeed associate in convention with the teachers of the public schools, and Dr. McCosh of Princeton joined them, and in this he was in advance of his time by about a score of years; but for the president of Yale or of Harvard to be seen in such company twenty years ago would have seemed as incongruous as to find Daniel

Webster present and taking part in the debating society of a country school. There was also a time not long ago when between the high school and the grammar school there was a great gulf fixed. No pupil was admitted to the higher realm without passing the ordeal of a rigid examination, in which his former rank and his former school record had little if any influence. All this has now changed. Education is regarded as a continuous process. The college takes a vital interest in the first steps in the primary school and in any step from first to last in all the grades of schools. Kindergarten teachers and presidents of universities meet on the common level as co-workers in the educational vineyard; and more and more pupils are advanced from grade to grade—from elementary to secondary schools, and from those to the high school or college courses—upon the judgment of those who have taught them and learned their capacity, rather than upon the hasty and imperfect judgment of an examination by those who are to teach these pupils in the future. In education as in religion the stereotyped processes and restrictions of the past have gradually yielded to the liberalizing tendency of the age. For dogma and adherence to creeds religion now substitutes the spirit that should dwell in the individual; and in like manner, instead of an arbitrary curriculum and arbitrary methods to be imposed upon all, we find in education a recognition of the individual pupil, his needs and his aptitudes, and a disposition to adapt the instruction to these needs for the great purpose of developing him; and this sentiment found ample expression at Springfield.

It was a delight to hear from Professor Hart of Harvard the appreciative recognition of the work which sincere and capable teachers of primary and grammar schools are doing for public education, as not inferior in importance to that of the colleges. The president of Tufts college, and others not less distinguished, reiterated the same sentiment; and in the sessions generally, the discussions seemed quite uniformly to assume that school training in all its stages rests upon the same philosophy, and that no one of these stages is inferior in importance. Thoughtful students of education have noted and regretted the tendency toward a kind of training which shall only fit the young for an early success in business life—mere money-getting or political and social advancement. President Schurman's strong, bold

words were in pleasing contrast to this tendency. "If we nowadays seek an analogy for the mind," he said, "we find it in the living organism more than anywhere else; and education is a food for this organism rather than a whetstone to sharpen the faculties. If mere development of the faculties were the purpose of education, then education could be obtained in the practical occupations of life much better than in the school. Put English language and literature first, and take half the time to teach these liberal, humanizing lessons. This is the only enduring educational foundation." In the same strain Mr. Mabie of the *Christian Union* said, "the freshness of knowledge is the great secret of education. The end of education is to turn every fact into a truth as fast as you can do it. We pass through all knowledge and fact to the truth behind it: these are the creative elements which are to stand as the foundation of the whole."

"Ethical instruction," said Professor Palmer of Harvard—"the principles of morality—is not appropriate in elementary schools." It is practical morality—learning virtue by virtuous living, the practice of virtue—that should be sought in schools; and for a child to be self-conscious, consciously conscientious—to be fingering his motives—will produce a kind of moral and intellectual stuttering, or hesitancy, and lead at length to what might be termed moral "nervous prostration." Intellectual and moral spontaneity is what leads to healthy growth.

It will be seen from this outline that the discussions at the Springfield meeting were raised to a plane above the usual low level of petty methods and dull detail which too frequently characterize such gatherings. The friends of popular education may congratulate themselves that one meeting has been held where the true spirit of education has not been lost sight of in attention to the form of technical teaching.

As this number of the EDUCATIONAL REVIEW is issued the nine conferences on the curriculum of the secondary schools[1] are in session at the places designated. Those on Latin and Greek meet at Ann Arbor; that on English at Vassar college; that on other modern languages at Washington; that on mathematics at Harvard university; those on physics, etc., and on natural history at Chicago; that on history and civil government at Madison; and that on geography

[1] EDUCATIONAL REVIEW, IV: 203, 514.

at the Cook county normal school. The membership of the conferences is as follows:

Latin: F. L. Bliss, Principal of the Detroit High School, Detroit, Mich.; Jno. T. Buchanan, Principal of the Central High School, Kansas City, Mo.; William C. Collar, Head-master of the Roxbury Latin School, Roxbury, Mass.; David Y. Comstock, Hotchkiss School, Lakeville, Conn.; J. S. Crombie, Principal of the Adelphi Academy, Brooklyn, N. Y.; Professor James H. Dillard, Tulane University, New Orleans, La.; Rev. William Gallagher, Principal of Williston Seminary, Easthampton, Mass.; Professor William G. Hale, Chicago University, Chicago, Ill.; Julius Sachs, Principal of the Collegiate Institute for Boys, New York City; Professor C. H. Bennett, Cornell University, Ithaca, N. Y.

Greek: E. W. Coy, Principal of the Hughes High School, Cincinnati, O.; Professor Martin L. D'Ooge, University of Michigan, Ann Arbor, Mich.; A. F. Fleet, Principal of Missouri Military Academy, Mexico, Mo.; Ashley D. Hurt, Head-master of the High School, Tulane University, New Orleans, La.; Robert P. Keep, Principal of the Free Academy, Norwich, Conn.; Professor Abby Leach, Vassar College, Poughkeepsie, N. Y.; Clifford H. Moore, Phillips Academy, Andover, Mass.; William H. Smiley, Principal of the High School, Denver, Col.; Professor Charles F. Smith, Vanderbilt University, Nashville, Tenn.; Professor Benjamin I. Wheeler, Cornell University, Ithaca, N. Y.

English: Professor Edward A. Allen, University of Missouri, Columbia, Mo.; F. A. Barbour, Principal of the Michigan Normal School, Ypsilanti, Mich.; Professor Frank A. Blackburn, Chicago University, Chicago, Ill.; Professor Cornelius B. Bradley, University of California, Berkeley, Cal.; Professor Edward E. Hale, Jr., University of Iowa, Iowa City, Ia.; Professor George L. Kittredge, Harvard University, Cambridge, Mass.; Charles L. Loos, Jr., High School, Dayton, O.; W. H. Maxwell, Superintendent of Schools, Brooklyn, N. Y.; Professor F. B. Gummere, Haverford College, Pa.; Samuel Thurber, Master of the Girls' High School, Boston, Mass.

Other Modern Languages: Thomas B. Bronson, Lawrenceville School, Lawrenceville, N. J.; Professor Alphonse N. Van Daell, Massachusetts Institute of Technology, Boston, Mass.; Charles H. Grandgent, Director of Modern Languages in the Public Schools, Boston, Mass.; Professor Charles Harris, Oberlin College, Oberlin, O.; Professor Edward S. Joynes, South Carolina College, Columbia, S. C.; William T. Peck, High School, Providence, R. I.; Professor Sylvester Primer, University of Texas, Austin, Tex.; John J. Schobinger, Principal of a Private School for Boys, Chicago, Ill.; Dr. L. F. Soldan, Principal of the High School, St. Louis, Mo.; Isidore H. B. Spiers, William Penn Charter School, Philadelphia, Pa.; Professor Walter D. Toy, University of North Carolina, Chapel Hill, N. C.

Mathematics: Professor William E. Byerly, Harvard University, Cambridge, Mass.; Professor Florian Cajori, Colorado College, Colorado Springs, Col.; Chancellor W. S. Chaplin, Washington University, St. Louis, Mo.; Arthur H. Cutler, Principal of a Private School for Boys, New York City; Professor Henry B. Fine, College of New Jersey, Princeton, N. J.; W. A.

Greeson, Principal of the High School, Grand Rapids, Mich.; Professor Simon Newcomb, Johns Hopkins University, and Washington, D. C.; James L. Patterson, Lawrenceville School, Lawrenceville, N. J.; Professor George D. Olds, Amherst College, Amherst, Pa.; Professor T. H. Safford, Williams College, Williamstown, Mass.

Physics, Astronomy, and Chemistry: Professor Brown Ayres, Tulane University, New Orleans, La.; Irving W. Fay, The Belmont School, Belmont, Cal.; Alfred P. Gage, English High School, Boston, Mass.; Professor William W. Payne, Carleton College, Northfield, Minn.; W. C. Peckham, Adelphi Academy, Brooklyn, N. Y.; William McPherson, Jr., Ohio State University, Columbus, O.; Professor Ira Remsen, Johns Hopkins University, Baltimore, Md.; Professor J. H. Shepard, South Dakota Agricultural College, Brookings, S. D.; Professor William J. Waggener, University of Colorado, Boulder, Col.; George R. White, Phillips Academy, Exeter, N. H.

Natural History (*Biology, including Botany, Zoölogy, and Physiology*): Professor Charles E. Bessey, University of Nebraska, Lincoln, Neb.; Arthur G. Boyden, Normal School, Bridgewater, Mass.; Professor Douglas H. Campbell, Leland Stanford Jr. University, Palo Alto, Cal.; President John M. Coulter, University of Indiana, Bloomington, Ind.; Principal S. A. Merritt, Helena, Mont.; W. B. Powell, Superintendent of Schools, Washington, D. C.; Professor A. H. Tuttle, University of Virginia, Charlottesville, Va.; O. S. Westcott, Principal of the North Side High School, Chicago, Ill.; Charles B. Scott, Principal of the High School, St. Paul, Minn.; Professor Samuel F. Clarke, Williams College, Williamstown, Mass.

History, Civil Government, and Political Economy: President Charles K. Adams, University of Wisconsin, Madison, Wis.; Abram Brown, Principal of the High School, Columbus, O.; Professor W. W. Folwell, University of Minnesota, Minneapolis, Minn.; Professor A. B. Hart, Harvard University, Cambridge, Mass.; Professor Jesse Macy, Iowa College, Grinnell, Ia.; Professor Edward G. Bourne, Adelbert College, Cleveland, O.; Ray Greene Huling, Principal of the High School, New Bedford, Mass.; Professor J. H. Robinson, University of Pennsylvania, Philadelphia, Pa.; Henry P. Warren, Principal of the Albany Academy, Albany, N. Y.; Professor Woodrow Wilson, College of New Jersey, Princeton, N. J.

Geography (*Physical Geography, Geology, and Meteorology*): Professor Thomas C. Chamberlin, Chicago University, Chicago, Ill.; Professor W. M. Davis, Harvard University, Cambridge, Mass.; Alexander E. Frye, Superintendent of Schools, San Bernardino, Cal.; Delwyn A. Hamlin, Master of the Rice Training School, Boston, Mass.; Professor E. J. Houston, Central High School, Philadelphia, Pa.; Professor Mark W. Harrington, The Weather Bureau, Washington, D. C.; Francis W. Parker, Principal of the Cook County Normal School, Normal Park, Chicago, Ill.; G. M. Phillips, Principal of the State Normal School, West Chester, Pa.; Principal Charles F. King, Dearborn School, Boston, Mass.; Professor Israel C. Russell, University of Michigan, Ann Arbor, Mich.

The questions suggested for discussion in each Conference have been somewhat altered, and are given below in their final form.

1. In the school course of study extending approximately from the age of six years to eighteen years—a course including the periods of both elementary and secondary instruction—at what age should the study which is the subject of the Conference be first introduced?

2. After it is introduced, how many hours a week for how many years should be devoted to it?

3. How many hours a week for how many years should be devoted to it during the last four years of the complete course; that is, during the ordinary high school period?

4. What topics, or parts, of the subject may reasonably be covered during the whole course?

5. What topics, or parts, of the subject may best be reserved for the last four years?

6. In what form and to what extent should the subject enter into college requirements for admission? Such questions as the sufficiency of translation at sight as a test of knowledge of a language, or the superiority of a laboratory examination in a scientific subject to a written examination on a text-book, are intended to be suggested under this head by the phrase "in what form."

7. Should the subject be treated differently for pupils who are going to college, for those who are going to a scientific school, and for those who, presumably, are going to neither?

8. At what stage should this differentiation begin, if any be recommended?

9. Can any description be given of the best method of teaching this subject throughout the school course?

10. Can any description be given of the best mode of testing attainments in this subject at college admission examinations?

11. For those cases in which colleges and universities permit a division of the admission examination into a preliminary and a final examination, separated by at least a year, can the best limit between the preliminary and the final examinations be approximately defined?

The New York superintendents in their annual meeting, held at Yonkers, reiterated their oft-expressed judgment, that in future no person should be permitted to teach in the city and village public schools who had not qualified himself for his work by an adequate course of professional training. They decided to persist in their attempt to secure legislation giving State aid to the establishment and maintenance of training schools for teachers in cities and villages; an attempt that has been hitherto defeated, largely through political influence.

Another subject that engaged the attention of the New York superintendents was compulsory education. While accounts of gratifying success in the enforcement of the existing cumbrous and ambiguous statutes were given, the fact

was very clearly brought out that in the greater part of the State the law is practically a dead letter. It was decided to recommend to the legislature the adoption of several amendments designed to increase the efficiency of the work. The more important of these amendments are the following: the years between which attendance during the entire school year should be made obligatory are seven and thirteen; failure on the part of parents or guardians to educate a child or send it to school should be made a criminal offense, punishable by fine or imprisonment; and cities or villages failing to provide for an adequate enforcement of the law should be punished by the withholding of their distributive share in the free school fund. At present the compulsory age is eight to fourteen, and attendance is required only fourteen weeks each year; the failure of a parent or guardian to provide education for a child is punishable only by civil process; while three-fourths of the cities and villages of the State have never made the slightest provision for the enforcement of the law. No one who has any conception of the danger to the common-wealth that arises from allowing the children of the thousands of illiterate immigrants that land in New York every week to grow up in ignorance, or who has the slightest appreciation of the difficulties involved in the attempt to enforce the present law, can have a moment's doubt as to the wisdom of the superintendents' suggestions.

One of the most interesting features of this very fruitful meeting was an address by the recently elected State superintendent, Mr. James F. Crooker. Mr. Crooker came out unequivocally and forcibly in favor of a project that had been suggested and strenuously urged by his predecessor, Mr. Andrew S. Draper, namely, the appointment by the legislature of a commission charged with the duty of investigating the entire educational system of the State and suggesting needed legislation. Should Mr. Crooker's advocacy of this plan result in its adoption, there can hardly be a doubt that such a commission would lead to a thorough overhauling of the State school system and the rooting out of many abuses that now flourish vigorously.

The election of Mr. James Godwin, assistant superintendent of New York City, as president of the Council for the ensuing year, is highly significant. Until very recently the New York City superintendents have held themselves aloof from their

colleagues in the other cities of the State. The fact has not been creditable to the educational authorities of the metropolis and the results have really been disastrous to the cause of education there. During the last two or three years, however, largely through the efforts of Mr. Godwin, there has been a decided change, and his election by the Council was a graceful recognition of the fact. The New York superintendents should stand together. To overcome the forces arrayed against progress needs their united strength.

Dr. Brooks of Philadelphia has prepared an excellent programme for the meeting of the Department of Superintendence, to be held in Boston, February 21–23. As the National Educational Association will not meet, as such, until 1894, there is certain to be an unusually large and representative attendance of public school men at the Boston meeting, and they will be well repaid for any expenditure of time and money that may be necessary. Commissioner Harris will be heard on the lessons of school statistics concerning the moral influence of education. Superintendents Gilbert of St. Paul and Cogswell of Cambridge will discuss the reconstruction of the grammar school course, in the light of the Cambridge experiment, described by Professor Hart in the EDUCATIONAL REVIEW for October last. Superintendent Cooper of Galveston, whose strong paper at the Philadelphia meeting two years ago is well remembered, will attack the difficult problems presented by the system of examinations and promotions in elementary schools. Superintendents Maxwell of Brooklyn and Draper of Cleveland will read papers on school supervision and administration in large cities, while Superintendent Marble of Worcester will deal with his favorite subject of the teaching of English in public schools. Superintendent Curtis of New Haven will describe experiments in woodwork in grammar schools. President De Garmo will have a paper dealing with the comparative value of literature and history as agents in moral training. The ever present question of the professional training of teachers will be dealt with by Superintendents Gove of Denver, Balliet of Springfield, and Greenwood of Kansas City. Rural school topics are to be intrusted to Superintendents Waller of Pennsylvania and Poland of New Jersey, and Mr. Henry Sabin of Iowa.

To dispose of all these important subjects in three days and

yet have time enough for discussion will be a difficult task, and cannot be accomplished unless Dr. Brooks insists on enforcing the rules strictly as to the time limit for papers and discussions.

The Commissioner of Education has submitted to the Secretary of the Interior his annual statement of the work of his Bureau, and in it brings his statistical tables down to the year 1890–91. It appears that in 1889–90, the enrollment of pupils in the common schools was 12,697,196, or 20.27 per cent. of the population. In 1880–81, the enrollment advanced to 13,203,170, and the average daily attendance was 8,404,228. The teachers employed in 1890–91 numbered 363,922, of whom just about one-third were males. The total expenditure for schools was $148,173,487, more than $92,000,000 of which was spent for salaries of teachers and supervising officers. About nineteen per cent. of the annual expenditure was devoted to permanent improvements, such as school sites, buildings, and furniture.

The statistics of higher education given by the Commissioner are also interesting. It appears that the United States can boast of 430 colleges and universities. An impartial critic would probably classify them as universities, five; colleges with graduate departments of high grade, 10; colleges, (say) 200; secondary schools giving more or less instruction of collegiate grade, (say) 215. It is a pity that we cannot have this screening process applied officially and authoritatively.

The 430 so-called colleges and universities require the services of 8462 professors and instructors, of whom 7350 are men. The students in these institutions number 122,323, of whom 92,589 are males; 20,951 students are pursuing courses leading to the A. B. degree, 7311 look forward to the degree of B. S., 2317 to that of B. L., 2779 to that of Ph. B., 1060 to that of C. E., and 1437 to various other more or less significant titles: 3978 students are in pedagogical courses, 6358 in business courses, and 4115 are pursuing partial or special courses of various kinds. There are 177 normal schools—131 under public supervision, and 46 private institutions—having 1986 teachers and 42,307 pupils preparing for this work of teaching. They also give academic instruction to 10,303 pupils.

Commissioner Harris brings out clearly the vast work that

the Bureau is doing and the increasing value of its library and collections. He sapiently remarks that the function of the Bureau, as defined by Act of Congress, is "that of aiding local self-direction of schools in all parts of the country and not that of furnishing centralized direction from Washington." It is to be hoped that the fantastic and imaginative person who writes warlike articles on the Bureau of Education for the *Catholic Review*, will not pass the above sentence by. It ought to act as a sedative to quiet his fears that the United States army, with the Commissioner of Education at their head, may march on New York and close up, *vi et armis*, all private and parochial schools.

"All's well that ends well," even though it relates to the provision for an educational exhibit at the World's Columbian Exposition. About 150,000 square feet of space is now available for the educational exhibit, which will be placed, as originally intended, in the Liberal Arts building. A new building is to be erected, and the ethnological exhibit, previously assigned to the Liberal Arts building, will be transferred to it. The space thus vacated, plus several thousand square feet hitherto unassigned, will make a very fair provision for education. The directors have surrendered only at the point of the bayonet, so to speak, and in not the best of temper. Preparations to occupy the space properly should now go forward with all possible speed, and assignments to the several States ought to be made without a week's delay.

The EDUCATIONAL REVIEW takes pleasure in complying with the request of the Association of officers of New England colleges to print the following memorandum, which was prepared at its recent meeting held at Williams college. The Association, it must be said, weakens the force of its recommendations and displays a lack of backbone somewhere, by adding that no college faculty is committed to the policy outlined. If the policy is a good one, why are the college faculties not committed to it? The memorandum is as follows:

The Association of officers of colleges in New England, impressed with the real unity of interest and the need of mutual sympathy and help throughout the different grades of public education, invites the attention of the public to the following changes which, without insisting upon details, it

recommends for gradual adoption in the programme of New England grammar schools.

1. The introduction of elementary natural history into the earlier years of the programme as a substantial subject, to be taught by demonstrations and practical exercises rather than from books.

2. The introduction of elementary physics into the later years of the programme as a substantial subject, to be taught by the experimental or laboratory method, and to include exact weighing and measuring by the pupils themselves.

3. The introduction of elementary algebra at an age not later than twelve years.

4. The introduction of elementary plane geometry at an age not later than thirteen years.

5. The offering of opportunity to study French, or German, or Latin, or any two of these languages, from and after the age of ten years.

6. The increase of attention in all class-room exercises in every study to the correct and facile use of the English language.

In order to make room in the programme for these new subjects the Association recommends that the time allotted to arithmetic, geography, and English grammar be reduced to whatever extent may be necessary.

The Association makes these recommendations in the interest of the public school system as a whole; but most of them are offered more particularly in the interest of those children whose education is not to be continued beyond the grammar school.